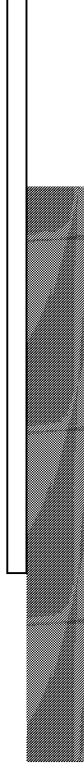


# RCMP Digital Strategy



*“Sapiens rule the world because we are the only animal that can cooperate flexibly and effectively in large numbers”*

Yuval Noah Harari

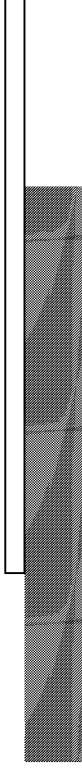
*Sapiens: A Brief History of Mankind*



## Digital Technology Trends

- Artificial Intelligence
- The Internet of Things
- Conversational Platforms
- Connectivity





## Artificial Intelligence

- **Intelligent Apps and Analytics**
  - Creation of Virtual Personal Assistant and Smart Advisors
  - Facial recognition, understanding user emotions and predicting user needs
- **Intelligent Things** – autonomous vehicles, robots and drones.  
Intelligent Things are capable of interacting more naturally with their surroundings and people.

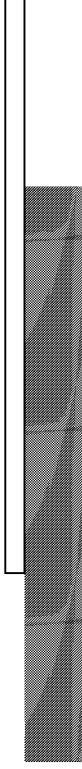




## The Internet of Things

- Digital Twins
  - A digital representation of a real world entity or system that links to the real world
  - Improve ability to collect and visualize the right data, apply the right analytics to improve decision making.

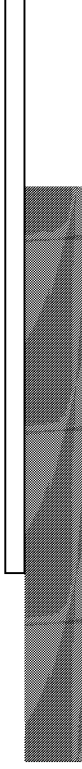




## Conversational Platforms

- A big paradigm shift in how humans interact with the digital world.
- Currently in use with smart phones i.e. “What is the weather forecast?”
- As technology matures platform may be able to collect oral testimony from crime witnesses, resulting in the creation of a suspect’s image.





## Connectivity

- A big paradigm shift in how humans interact with the digital world.
- Currently in use with smart phones i.e. “What is the weather forecast?”
- As technology matures platform may be able to collect oral testimony from crime witnesses, resulting in the creation of a suspect’s image.



# RCMP Digital Strategy

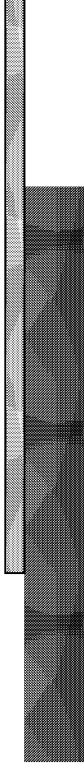
- **Digital Vision**
  - Services are seamless, secure and digitally enabled
  - Information and data are open and accessible
  - Tools that enable rather than frustrate GC priorities and operations
- **Digital Principles (February 2018)**
  - Understand users and their needs
  - Iterate and improve frequently
  - Build the right team
  - Integrate proportionate security and privacy from the outset
  - Build in an open and interoperable way
  - Use the right tools for the job
- **Single Digital Policy (2019)**
  - Integrate and replace IT, IM and Service policies



Royal Canadian Mounted Police  
Gendarmerie royale du Canada

Canada

# RCMP Digital Strategy



- Starting the dialogue . . .

Support  
mobile  
workforce  
optimization

Improve  
crime fighting  
and public  
safety with  
data analytics

Enhance  
community  
and victim  
interactions  
and  
engagement

Strengthen  
accountability  
and  
workforce  
management



# RCMP Digital Strategy



## Scenario 1

**Year:** 2018

**Location:** Shopping mall, Fort Saskatchewan

**Situation:** Man becomes unruly, exhibits violent behaviour

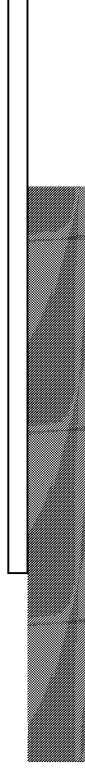
# RCMP Digital Strategy



Royal Canadian Mounted Police  
Gendarmerie royale du Canada

Canada

# RCMP Digital Strategy



## Scenario 1

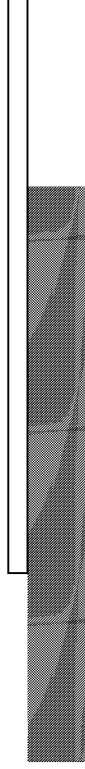
**Year:** 2020

**Location:** Shopping mall, Fort Saskatchewan

**Situation:** Man becomes unruly, exhibit violent behaviour

**Digital Strategy Pillar:** Support Mobile work force optimization.

# RCMP Digital Strategy



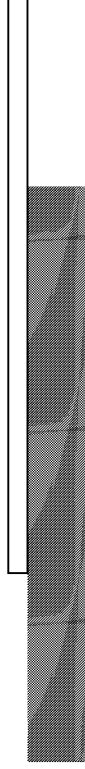
## Scenario 2

**Year:** 2018

**Location:** Richmond, B.C.

**Situation:** Bike theft and related criminal activity

# RCMP Digital Strategy



## Scenario 2

**Year:** 2020

**Location:** Richmond, B.C.

**Scenario:** Bike Theft and related Criminal Activity

**Digital Strategy Pillar:** Improve crime fighting and public safety with data analytics

## National Cybercrime Solution Technology Note

### Assumptions

- All the technologies must be Cloud enabled
- All the technologies must horizontally scalable

### Main Sub-Systems

- National Cybercrime Reporting System (NCRS)
- National Cybercrime Co-ordination System (NCCS)
- National Cybercrime Analytic System (NCAS)

### NCRS

- User Interface
  - Public Reporting Portal
    - Thin Client, Mobile device friendly public facing web site
    - Authentication One Time Password (OTP): SMS or email, using AWS SES and SNS
      - Mobile phone or email address will be used to send response message
  - POJ Portal (Internal Management Console)
    - Rich Thin Client, Leverage CJIM experience Mobile friendly
    - Intranet, through Secure Access Portal
  - Public Cybercrime Education Portal
    - Open Source Content Management Solution: Drupal
    - Thin Client, Mobile device friendly public facing web site
  - Cybercrime Education Content Internal Management Portal
    - Open Source Content Management Solution: Drupal
    - Thin Client, should use RCMP or GOC standard Content management solution
    - For unified user interface, could consider to custom develop the management portal as rich client leveraging CJIM experience and the Content management API
  - Public Reporting Mobile Apps
    - Simple Wrapper to the mobile friendly web site
    - Leverage mobile app's push notification (AWS SNS)
- Value-Added Process
  - Incident forwarding service
    - Based on the content, forward to internal or external partner
    - Fraud -> CAFC
    - Spam -> CRTC
    - Critical Infrastructure
    - Child Sexual Exploitation -> Cybertip
  - Cybercrime Incident General Response Service
    - Based on Incident attribute, search the educational content to provide general response, such as mitigation steps or course of action etc.
  - Cybercrime Incident Alert Service

- Trigger when new incident is reported
- Group similar incident together by incident indicators
- Based on pre-defined (adjustable through user interface) threshold and criteria to inform the POJ about the incident(s) in their jurisdiction and related incident(s)
- Existing incident metadata must be enhanced in real time when new incident is reported or case was created in NCS

#### • Data Store

- Relational database
  - For content management solution
- NOSQL Database
  - Incident data needs flexible metadata model
  - Handle semi-structured un-structured data

### NCCS

#### • User Interface

- Cybercrime investigation support wiki
  - For POJ
  - Host on RCMP standard wiki platform
  - Content contributed by all POJ
- POJ Portal
  - Rich Thin Client, Leverage CJIM experience Mobile friendly
  - Report/Query Cybercrime incident
- Internal Intake & Triage Portal
  - Rich Thin Client, Leverage CJIM experience Mobile friendly
  - For NC3 staff
  - Intake & Triage
    - Incidents
    - Intelligence
  - Manage coordination case
  - Manage investigation support case

#### • Value Added Process

- Rule Engine Based Task/Workflow Management
  - High level rule only
  - Leverage CJIM experience
  - Online Machine Learning model to create flexible rule over time
- Cybercrime Incident Matching /Enriching Process
  - Trigger by:
    - New incident is reported
    - Query specific indicator(s)
    - New intelligence data is added
    - New reference data is added
  - Incident enriched with:

- Linkage with similar incident(s)
  - Intelligence data
  - Query activity (who is interested)
  - Trend
- Co-ordination Case Recommendation Process
  - Based on pre-defined threshold and criteria (Rule Engine-based), create case file to be review by NC3 intake and triage unit
  - Case file is link to a Task that certain workflow can be enforced
- Data Store
  - Relational Database
    - Case
    - Task
    - Workflow
    - Business Rules
    - Reference Data
      - IP to Vendor mapping
      - MAC to Hardware vendor mapping
      - Etc.
  - NoSQL Database
    - Incident Data
    - Cybercrime Intelligence Data
    - Audit and activity Log

## NCAS

- User Interface
  - Malware Intake
    - Zip and upload
    - Isolated
    - Manual steps required
  - Evidence Data Intake
    - Upload to staging area
    - Manual steps required
  - Intelligence Data Intake
    - Upload to staging area
    - Manual steps required
- Value Added Process
  - Evidence Data Analytic Process
    - Text Classification/Summary
    - Evidence Data minimization
    - Produce Actionable Intelligence Data
    - Could provide early business benefit during prototyping
  - Intelligence Data Analytic Process
    - Name Entity Recognition
    - Topic Modeling



- Extract Intelligence data from massive data set
- Produce Actionable Intelligence Data
- Could provide early business benefit during prototyping
- Data Store
  - Relational Database
    - Reference Data
    - Intake log
  - NoSQL Database
    - Intelligence Data
    - Trend Analysis
    - Statistic
  - Data Lake
    - HDFS cluster
    - Only holds copy of the data, No DR requirement
  - Solr
    - No schema
    - Indexed and easy to search
  - Modify is more expensive to do

#### Benefit of Cloud based solution

- Storage: be able to on demand allocate of storage on cloud file system at the scale of terabytes or even petabytes level. To support analytical data processing
  - For NCRS, keep all the attached in S3 bucket with server side encryption
- Database: MongoDB or HBase No SQL database, open source, available as Database-as-a-Service (DaaS) on all the major cloud platforms
  - POC only, NCCS will most likely be in RCMP data center
  - If MongoDB can not be deployed in a reasonable time frame
- Analytical Tools: all the major cloud platform has their own Software-as-a-Service (SaaS), based on the business requirement, certain tool should be selected, which could dictate the selection cloud platform. The recommendation is to leverage the multiple vendor endorsed open source software/framework to reduce the risk of vendor lock-in and losing support
  - POC only
  - Leverage open source only
- Minimum up front infrastructure cost: development can start with virtual no infrastructure investment
  - POC
  - NCRS

#### Cloud based solution challenges

- Data exchange between RCMP internal data sources and Cloud based NC3 application
  - Connectivity
  - Security
  - Speed
  - Volume/cost
- Data Access Control:

- Through the NC3 portal
- Internal Thread: system/database administrator have full access to the raw data without auditing
- Integration with RCMP hosted applications
- Impact to current process
  - Testing
  - Change management

#### Prototyping Opportunities:

- Mobile Friendly Web Site Design
- GOC/RCMP Content Management Solution
  - End user site must be mobile friendly
  - Content can be searched (tag or other metadata) and content to be used as general response for user report
  - Content management API for possible custom development
- Cloud integration POC
  - AWS SQS
    - With S3 bucket for message more than 256K in size
  - AWS SNS
    - SMS OTP
    - SMS response
  - AWS SES
    - Email OTP
    - Email response
  - AWS server side encryption
    - Document in S3 bucket
  - AWS KMS
- Mobile App Development
  - GOC Standard/Approach
  - Implementation Framework (Simple wrapper/redirect)
    - iOS
    - Android
  - Mobile Push Notification using WAS SNS
    - Obtain the credentials/token when first time launching the app
    - Send push notification using the token/credentials
- Incident Matching Rule Engine
  - Leverage CJHM Velocity Rule Engine design
  - Search Engine for Fuzzy search
- Nature Language Processing (NLP)
  - Name Entity Recognition (NER)
    - Malware
    - Hacking tool
    - Moniker
    - Address

- Dark web market place
  - Victim Organization
- Topic Modeling
  - Hacking technique
  - Identity Thief
  - Phishing email
- Text Classification
  - Extract evidence from sized files
  - Cybercrime incident report free text description summary
- Nature Machine Translation
- Evaluation Targets
  - Apache OpenNLP
  - Stanford's CoreNLP
  - LingPipe
  - OpenNMT-tf
- Machine Learning
  - NLP Training for NER, Topic Modeling and Text Classification
  - Supervised ML for NLP, provide feed back and improve with each real cases
  - Evaluation Target
    - Scikit-Learn
    - TensorFlow
    - Apache SystemML
    - Spark MLlib
    - Google GoLearn
- Predictive analytics
  - Data mining
  - Statistics
  - Trend prediction for Cybercrime incidents
  - Evaluation Target
    - H2O Prediction Engine
    - Apache PredictionIO
- NoSQL Database
  - HBase
  - MongoDB
- Integration with External Systems
  - Data standard: NEIM, STIX, MISP
  - Communication: RESTful Web Service, MQ
  - Security: Encryption, Digital Signature, Authentication
- Big data Repository
  - Hadoop File System: HDFS
  - Cluster Computing framework: MapReduce/Apache Spark
- AI Chatbot
  - Nice to have
  - Reduce online support cost

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## **Annex A**

### **Statement of Requirements**

#### **STRATEGIC POLICING INTELLIGENCE-DRIVEN ENTERPRISE RESOURCE (SPIDER) ANALYTICS SOLUTION**

This document is designated as Protected B

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## 1. OVERVIEW

### 1.1 Background

As Canada's national police force, the *RCMP* is a critical element of the Government of Canada's (GC) commitment to ensure a safe and secure Canada. Under the authority of the *Royal Canadian Mounted Police Act*, the *RCMP* keeps Canadians safe from criminals, organized crime groups and terrorists, on their streets and in their communities, locally, nationally and internationally. The *RCMP* includes approximately 20,000 officers, 2,000 civilian members and 3,500 Public Service Employees, operating at the National Headquarters in Ottawa and in over 750 detachments across Canada.

The collection and sharing of information on potential threats and criminal activity is critical for prevention of crime, ensuring the safety of officers and the public and bringing criminals to justice. Through *intelligence* and investigative activities, the *RCMP* collects and analyzes massive amounts of information to detect and prioritize threats, set operational priorities, effectively allocate resources, disrupt criminal organizations, and solve crimes. The *RCMP* also provides a conduit for the exchange of information about organized and serious crime amongst law enforcement organizations such as Public Safety Canada, the Department of Justice (DOJ), the Canada Border Services Agency (CBSA), Citizenship and Immigration Canada (CIC) and law enforcement organizations across Canada at the provincial and municipal levels.

The Criminal Intelligence Service Canada (*CISC*) represents the only formal national *intelligence* networking structure of Canadian law enforcement at the municipal, provincial, territorial, and federal levels committed to detecting, reducing and preventing organized and serious crime. Through the Criminal Intelligence Service Canada (*CISC*), the *RCMP* collaborates and shares criminal *intelligence* with 380 law enforcement agencies across Canada. At the global level, the *RCMP* maintains partnerships with the international law enforcement community to address transnational threats and bolster the effectiveness of policing operations, both domestically and globally.

The fight against major crime in Canada relies heavily on computer systems to store, collate, analyze, share and disseminate information. Provision of a secure, national, scalable, and centralized electronic *Solution* with the capacity for and analysis of large volumes of disparate *data* from many sources will provide significant operational efficiencies in the fight against criminal activity.

### 1.2 User Communities

The *Solution* will provide a common, adaptable *Solution* and will be configured to support the analytical needs of a wide-range of *RCMP User* communities and partners. These communities may include but are not limited to:

- Criminal analysts and investigative assistants;
- Specialized Federal Policing and Contract and Aboriginal Policing (CAP) units;
- Detachment commanders;
- Specialized administrative functions with business *intelligence* functions; and

- *CISC*, including *RCMP* and provincial and municipal law enforcement member organizations;

The *CISC* Central Bureau oversees the development and maintenance of a criminal *intelligence* *databank* Automated Criminal Intelligence Information System (*ACIIS*) on organized crime. Through this *databank*, law enforcement agencies at all levels collaborate in the collection, analysis and sharing of criminal *intelligence* across the country. It is anticipated that the Contractor will be engaged to design and configure the *Solution* to support *CISC* *data* analysis and information sharing requirements.

### 1.3 Data Sources

*The Solution* will provide a scalable platform with the capacity to process increased volumes as more sources are made available, and to capitalize on future opportunities for greater sharing and analysis of *data* from external sources.

Data sources may include, but are not limited to:

- *RCMP* records management systems and operational systems containing operational *data*;
- An *RCMP* Enterprise Data Warehouse (*EDW*) providing consolidated access to information maintained in a variety of source systems;
- Intelligence information and products contributed and shared by *CISC* and other partners;
- Large *data* files of various formats collected for specific purposes, such as open source *data*, phone usage logs, *SIM* cards, audio/video files, large financial transaction, wire taps, computer disks, files from seizures and searches; and
- Information shared by private and other public sector organizations that could potentially provide the missing link necessary for the identification and dismantling of a criminal organization.

Data volumes are expected to be in the 60 to 90 Gigabyte range for deployment to initial *User* communities, but will grow with time as additional large *data* sources are added. The overall total volume may exceed 10 *Petabytes*.

## 2. TECHNICAL REQUIREMENTS

The technical requirements include:

- Functional and Technical Environment mandatory requirements
- Functional and Technical Environment rated requirements
- Management requirements

*The Glossary in section 5 contains definition of terms, word usage, and explanation of acronyms.*

### 2.1 Mandatory Functional and Technical Environment Requirements

The **mandatory** requirements are listed first and are followed by the **rated** requirements.

Mandatory requirements are evaluated as Met/Not Met.

| Req. # | Mandatory Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | Functional Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|        | <p><b>Overview</b></p> <p>The functional requirements describe the mandatory functional requirements <i>the Solution</i> must deliver, enable, support and explains how <i>the Solution</i> interacts with <i>Users</i>. The mandatory requirements are organized into the following sections:</p> <ol style="list-style-type: none"> <li>1. <i>Intake and Usage</i></li> <li>2. <i>Collaboration</i></li> <li>3. Search and Query</li> <li>4. <i>Data Mining</i></li> <li>5. <i>Alerts</i></li> <li>6. Analysis</li> <li>7. <i>Predictive Analysis</i></li> <li>8. Audit</li> <li>9. Business Intelligence</li> <li>10. Reporting</li> <li>11. <i>Information Management</i></li> </ol> |
|        | <p><b>Intake and Usage</b></p> <p>This section addresses usage and management of information and <i>intake</i> of information into <i>the Solution</i>. The requirements in this section include inputs, outputs and activities required and the interactions <i>Users</i> must have with <i>the Solution</i>.</p>                                                                                                                                                                                                                                                                                                                                                                       |



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M-1 | <p><i>The Solution</i> must deliver, enable and support the functionality to <i>intake, incorporate</i> and manage (tracking history and <i>metadata</i>) <i>unstructured, semi-structured</i> and <i>structured data</i>, Including but not limited to:</p> <p>documents, email, messaging, telephone logs, <i>IP</i> (Internet Protocol) logs, computer event logs, text messaging, GPS trackers, financial transactions and flight manifests; serving up the <i>data</i> through all the <i>components</i> of the application/software that the vendor provides. File types include but are not limited to HTML, XLSX, <i>XML</i>, <i>PDF</i>, <i>MS</i> Office files, JPEG, JPEG 2000, RAW, TIFF GIF, PNG, BMP, SVG, WV, AVI, MPG, MPEG, MD, MDF, MIDI, AIF, WAV, CDA MDV, MP4, M4V, ACC, VMA, MKV), iBASE, VMD, text, 3D, CAD, GIS, compressed, and backup formatting files.</p> |
| M-2 | <p><i>The Solution</i> must deliver, enable and support the functionality to <i>intake, incorporate</i> and manage large amounts of <i>data</i>, including <i>big data</i> allowing for growth of <i>data</i>, without degrading performance.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| M-3 | <p><i>The Solution</i> must deliver, enable and support the automatic and manual input of <i>data</i> received from any <i>data</i> source, and the output of <i>data</i>. Data sources include but are not limited to: a <i>data</i> warehouse, web sources such as cloud and drop box, and <i>data</i> storage devices such as CD, DVD, USB, portable hard drive.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| M-4 | <p><i>The Solution</i> must deliver, enable and support the functionality to:</p> <ul style="list-style-type: none"> <li>a. Extract <i>data</i> from multiple sources, both <i>structured</i> and <i>unstructured</i>;</li> <li>b. Collect and load <i>data</i> from any <i>data</i> source ;</li> <li>c. Transform the <i>data</i> with integrity and standardize for consistency of format; and</li> <li>d. Allow qualification, certification, authentication and validation of <i>data</i>, as required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                               |
| M-5 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to export, import and download <i>data</i> including tables and graphs, in various formats including, but not limited to:</p> <ul style="list-style-type: none"> <li>a. Adobe <i>PDF</i> /A version 1.7 and later;</li> <li>b. <i>MS</i> Office Suite 2010 and above, which includes <i>MS</i> Word and <i>MS</i> Excel;</li> <li>c. Delimited Text (such as CSV);</li> <li>d. <i>XML</i> standard (usage to include long-term storage);</li> <li>e. Format compatible to interact with i2 <i>Analyst's</i> Notebook, including embedded <i>data</i>; and,</li> <li>f. File types JPEG PNG JPEG2 &amp; BMP with the ability to provide a time and date stamp, the creator, and source of information.</li> </ul>                                                                                         |
| M-6 | <p><i>The Solution</i> must deliver, enable, support and allow <i>User intake</i> of separate <i>data</i> sets for <i>User</i> defined, temporary comparison with all other <i>data</i>, without storing the <i>data</i> permanently. The temporary <i>data</i> set will be used like a sandbox and will permit linking for analysis of <i>criminal networks</i> and output to a linked graph and to other outputs, as required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-7 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to create mapping within, between or to <i>data</i> elements including documents, videos, and images, in reports or mapping coordinates.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M-8 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to change the display characteristics of a given <i>entity</i> type, for instance, <i>Users</i> may change the graphic icon that represents a person, on linkage or association charts, to a photograph of the individual.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M-9  | <i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to navigate and explore <i>data artifacts</i> , reports, analyses, forecasts, <i>dashboards</i> , queries, <i>databases</i> , and <i>structured</i> and <i>unstructured data</i> sources.                                                                                                                                                                                                                                                                                                                       |
| M-10 | <i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to edit information including, but not limited to, <i>entity</i> information, <i>records</i> , documents and reports.                                                                                                                                                                                                                                                                                                                                                                                           |
| M-11 | <i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to create and update forms, tabs, pick lists and other content <i>fields</i> , and add notes from <i>User</i> upload/creations.                                                                                                                                                                                                                                                                                                                                                                                |
| M-12 | <i>The Solution</i> must deliver, enable and support the functionality to attach documents and to allow links to documents.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|      | <p><b>Collaboration</b></p> <p>This section addresses sharing information more effectively and ensuring information flows across all <i>components</i> and updates all <i>components</i> of <i>the Solution</i> at the same time. The <i>Collaboration</i> requirements state how <i>the Solution</i> must use both <i>collected and created data</i> throughout all uses of <i>the Solution</i>. The <i>Collaboration</i> requirements also identify how <i>Users</i> must be able to act upon information and communicate with other <i>Users</i> from within <i>the Solution</i>.</p> |
| M-13 | <i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to collaborate with other <i>Users</i> , individually or in a team and to share information that <i>Users</i> are authorized to see.                                                                                                                                                                                                                                                                                                                                                                            |
| M-14 | <i>The Solution</i> must deliver, enable, support <i>User</i> authoring and versioning of <i>the Solution</i> queries and reports to allow <i>Users</i> to edit these files <i>collaboratively</i> , including allowing the storage of saved queries to allow them to be shared between <i>Users</i> .                                                                                                                                                                                                                                                                                   |
| M-15 | <i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to access a comprehensive, <i>collaborative</i> analytical environment within <i>the Solution</i> , to explore relationships among numerous <i>entities</i> (persons, addresses, vehicles, etc.) and collaborate with other <i>Users</i> and <i>Analysts</i> . The <i>Analyst's</i> environment includes, but is not limited to, textual and graphical outputs illustrating <i>networks</i> .                                                                                                                   |
| M-16 | <i>The Solution</i> must deliver, enable and support the functionality to create <i>multi-tenancy</i> domains (collaborative areas of work) for members of the <i>domain</i> where ideas and information can be exchanged. <i>The Solution</i> must allow a <i>User</i> to be a member of more than one domain. <i>The Solution</i> must ensure that <i>data</i> within one <i>domain</i> can only be seen by authorized <i>Users</i> of that domain.                                                                                                                                    |
| M-17 | <i>The Solution</i> must deliver, enable, and support the functionality to make the same information available to authorized <i>Users</i> , across <i>the Solution</i> , without the <i>User</i> having to move information from one <i>component</i> to another.                                                                                                                                                                                                                                                                                                                        |
|      | <p><b>Search and Query</b></p> <p>This section describes how information is found, re-found, how queries are used, and how <i>Users</i> are advised on information of interest. The Search and Query requirements address search, query and access to information, in whole or in part.</p>                                                                                                                                                                                                                                                                                              |

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| M-18 | <p><i>The Solution</i> must deliver, enable. and support search functionality, using all search types including full text, free text, form, and contextual, and allow <i>Users</i> to:</p> <ul style="list-style-type: none"> <li>a. Save searches for future processing;</li> <li>b. Run saved queries automatically on a periodic or scheduled basis; and,</li> <li>c. Save search queries for use by <i>Users</i> collectively across the <i>enterprise</i>, by a defined <i>User</i> group, or by a single <i>User</i>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M-19 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to search all structured, <i>semi-structured</i> and <i>unstructured data</i> sources, all reports, analyses, forecasts, queries, <i>databases</i> and <i>unstructured data</i> sources, and to display a <i>User</i>-defined ranked list of <i>data</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-20 | <p><i>The Solution</i> must deliver, enable, and support the functionality to search all <i>components</i> simultaneously and produce the same results when the same query is run, allowing for updates to the <i>data</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| M-21 | <p><i>The Solution</i> must deliver, enable and support the functionality to provide a history of all search criteria executed in a given session.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M-22 | <p><i>The Solution</i> must deliver, enable and support the functionality to display the top search results that meet the search criteria, in a top-down ranking relevant to the associated search results and allow <i>Users</i> to define the number of top search results to display.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| M-23 | <p><i>The Solution</i> must deliver, enable and support the functionality to display search results that include synonyms, determined from a <i>customized</i> synonym list, so that if a <i>User</i> searches for marijuana, the search results will also include words such as cannabis and weed. The search results must be shown in a ranked list.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-24 | <p>The <i>Solution</i> must deliver, enable, support, and allow <i>Users</i> to search for one or more <i>entities</i>, in the same single search.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M-25 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to conduct the following types of searches:</p> <ul style="list-style-type: none"> <li>a. Exact word match; such as “Apple Tree”;</li> <li>b. Proximity searches; such as, the words “apple” and “tree” within a specified number of words from each other;</li> <li>c. Proximity searches within sentences or paragraphs;</li> <li>d. Wildcard searches; such as “ABC*23456”. The wildcard should be able to take the place of spaces or a zero value, such as a license plate search for ABC?123 could result in ABC123 or ABC 123;</li> <li>e. Boolean search; such as, “John Smith”, “and/or”, bracketing logic;</li> <li>f. Standard date syntax; such as, (*73/10/8) would bring up 1973/10/08, 1973/08/10, 08/10/73, 08/10/1973, 10-08-73, 08-10-73, 10-08-1973, 10/08/73, 1973-10-08, 1973-08-10, 73-08-10, 73-10-08, and any other relevant combination;</li> <li>g. Finding synonyms of words used as search criteria; such as the application finds “cannabis” when searching for “marijuana” or “Bill” when searching for “William” and,</li> <li>h. Any combination of search criteria identified above within the same query.</li> </ul> |
| M-26 | <p><i>The Solution</i> must deliver, enable and support query functionality:</p> <ul style="list-style-type: none"> <li>a. Using a single <i>data</i> source;</li> <li>b. Using multiple <i>data</i> sources;</li> <li>c. Time scheduled; and</li> <li>d. Ad-hoc.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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| M-27 | <i>The Solution</i> must deliver, enable and support functionality that minimizes re-querying of the <i>data</i> source when reports and queries are run while ensuring new or updated information is available for use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|      | <p><b>Data Mining</b></p> <p>This section addresses identifying and discovering <i>entities</i>, patterns and relationships. Parameters include association, sequence classification, clustering, or forecasting.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-28 | <i>The Solution</i> must deliver, enable and support the ability to extract <i>entities</i> from unstructured and <i>semi-structured</i> content based on natural language rules/ <i>models</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| M-29 | <p><i>The Solution</i> must deliver, enable, support the functionality for <i>Users</i> to discover information, relationships, trends and patterns from structured sources of information, including, but not limited to:</p> <ul style="list-style-type: none"> <li>a. Database management systems; and,</li> <li>b. Structured text, including NoSQL, DBMS, RDBMS.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|      | <p><b>Alerts</b></p> <p>This section identifies the types of situations when <i>Users</i> will need to create or apply <i>alerts</i> and the capabilities the <i>alert</i> function must have.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| M-30 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to create, publish, modify and use <i>alerts</i> on <i>data</i> from any source. <i>Alerts</i> include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a. When a specific or ongoing file or <i>entity</i> is accessed or created;</li> <li>b. When information is changed or updated;</li> <li>c. When new or modified information is received in the system that matches a query request;</li> <li>d. When queries similar to those previously submitted are executed by another <i>User</i> (including notifying a <i>User</i> when another <i>User</i> queries an <i>entity</i> attached to an active report that was generated);</li> <li>e. During <i>data</i> source conflicts, including when a person historically shows up in one <i>data</i> source, such as financial institution <i>data</i>, but begins showing up in another such as in telecommunications <i>data</i>; and,</li> <li>f. When information is purged from the source system.</li> </ul> |
| M-31 | <i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to create, publish, modify and use <i>alerts</i> when an <i>entity</i> meets or exceeds a threshold, as configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| M-32 | <i>The Solution</i> must deliver, enable and support the functionality to notify <i>Users</i> by email or some other alerting method when an <i>alert</i> occurs and be able to include the visualization outputs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|      | <p><b>Analysis</b></p> <p>This section addresses the study and examination of <i>data</i> in a methodical way to discover and identify relationships, <i>networks</i>, and how all of the parts relate.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| M-33 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to:</p> <ol style="list-style-type: none"> <li>Analyze information using <i>data mining</i>;</li> <li>Analyze information using <i>predictive analysis</i> ; and,</li> <li>Plan and <i>model</i> scenarios.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| M-34 | <p><i>The Solution</i> must deliver, enable and support the functionality to permit <i>Users</i> to filter and do analysis on one or more <i>entities</i>, or on a group based on trends and patterns, geographical or other <i>metadata</i>, or <i>role based</i> factors.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| M-35 | <p><i>The Solution</i> must deliver, enable and support the functionality to build <i>networks</i> automatically, through the use of adaptive, <i>predictive detection models</i> without requiring that <i>Users</i> provide what is being investigated (an address, a name, a vehicle, a crime type, etc.).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| M-36 | <p><i>The Solution</i> must deliver, enable and support the functionality to rebuild <i>networks</i> as new <i>data</i> is introduced or removed, without requiring that <i>Users</i> manually modify the <i>network</i>, including when the <i>entity</i> of interest changes, such as from a name to an address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| M-37 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to display <i>temporal data</i> analysis using events or <i>entities</i> with established dates and/or times, regardless of the date format.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| M-38 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to perform <i>spatial data analysis</i> using Geographic Information System (GIS) <i>databases</i>. <i>Spatial data analysis</i> includes any of the formal techniques that study <i>entities</i> using their topological, geometric, and geographic properties.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| M-39 | <p><i>The Solution</i> must deliver, enable and support <i>slice and dice</i> analysis of information by <i>Users</i>. <i>Slice and dice data</i> analysis is a systematic reduction of a body of <i>data</i> into smaller parts and views to yield greater information insight and understanding from the <i>User's</i> unique perspective.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| M-40 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to perform time series and trend based analysis. Time series analysis comprises methods that seek to understand a sequence of <i>data</i> points, measured typically at successive times, and spaced at time intervals, and looks at abnormalities in the trends, trend changes and key players.</p> <p>The following are some of the questions asked to plot the <i>lifecycle</i> of a <i>criminal network</i>:</p> <ul style="list-style-type: none"> <li>When did the <i>network</i> surface?</li> <li>What was the evolution of the <i>criminal network</i> over time?</li> <li>When did the <i>network</i> undertake perpetrating different crimes?</li> <li>What is the time lag between a significant event, such as a package arriving at a specific address and the increase of a specific crime in specific parts of the country?</li> </ul> |
| M-41 | <p><i>The Solution</i> must deliver, enable and support functionality in <i>the Solution</i> for <i>Users</i> and <i>Administrators</i> to edit, break, create, or hide, <i>entity</i> linkages where further investigation and corroboration has found a link to be incorrect or has determined that a link should exist.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | <p><b>Predictive Analysis</b></p> <p>This section addresses the study and examination of historical <i>data</i> and the <i>component</i> parts in a methodical way to discover and identify likely new relationships, emerging <i>networks</i> and possible future outcomes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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| M-42 | <i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to create <i>predictive models</i> on future trends and behavioural patterns based upon past performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| M-43 | <i>The Solution</i> must deliver, enable and support the functionality to enable <i>Users</i> to create matrices to rank, score, and prioritize items, including but not limited to, <i>paired comparison matrices</i> , and <i>weighted ranking matrices</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| M-44 | <i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to apply statistical functions and sampling algorithms to <i>predictive detection models</i> using <i>data</i> from <i>the Solution</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| M-45 | <i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to modify predictors in <i>models</i> to test alternative scenarios.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| M-46 | <p><i>The Solution</i> must deliver, enable and support the functionality for <i>predictive threat detection models</i> that are rule-based and/or use an algorithmic approach. The rules must be fully configurable, enabling the <i>RCMP</i> to add, modify, or delete rules.</p> <p>These <i>models</i> will support <i>entity-link</i> analysis used to detect organized or collusive criminal activities. <i>Entity-link</i> analysis will provide investigators with information textually and visually to help identify what relationships or suspect behaviour need further investigation and follow-up.</p>                                                                                                |
| M-47 | <i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to perform <i>time series forecasting</i> . <i>Time series forecasting</i> is defined as forecasting future events based on known past events.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      | <p><b>Audit</b></p> <p>This section addresses the capability of <i>the Solution</i> to track and <i>record</i>, in a log file, the activities of a <i>User</i> or <i>Users</i> and the interactions of a <i>User</i> with <i>the Solution</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-48 | <i>The Solution</i> must deliver, enable and support the functionality to track and audit usage, in an audit log, for all <i>Users</i> , groups and roles across all <i>components</i> , from a single access point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| M-49 | <i>The Solution</i> must deliver, enable, support and allow <i>Administrators</i> and <i>Auditors</i> to view audit log <i>data</i> across all applications from a single access point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M-50 | <i>The Solution</i> must deliver, enable and support the functionality to provide the audit trail of a <i>record</i> from origin to current status.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|      | <p><b>Business Intelligence</b></p> <p>This section addresses the tools required within <i>the Solution</i> to create and explore <i>dashboards</i>, and <i>data visualizations</i>, and to improve decision-making and facilitate information sharing and analysis.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| M-51 | <p><i>The Solution</i> must deliver, enable and support the functionality to:</p> <ul style="list-style-type: none"> <li>a. Automatically analyze <i>data</i> and to resolve <i>entities</i> and <i>criminal</i> and <i>social networks</i>. When applying to persons, the functionality must allow for variations of the same name to be resolved such as William versus Bill, and first name versus initial, as well as variations due to language and cultural factors;</li> <li>b. Improve the accuracy of risk-based targeting using <i>social network</i> pattern matching <i>models</i>; and</li> <li>c. Allow <i>Users</i> and <i>Administrator</i> to edit and make changes to <i>entities</i>.</li> </ul> |

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| M-52 | <p><i>The Solution</i> must include a Business Intelligence (BI) capability with the following functions, as a minimum:</p> <ul style="list-style-type: none"> <li>a. Parameterized reporting;</li> <li>b. <i>Ad-hoc</i> querying;</li> <li>c. Data discovery tools;</li> <li>d. Interactive visualization;</li> <li>e. <i>Search-based BI</i>; and</li> <li>f. Plotting <i>data</i> across a map.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| M-53 | <p><i>The Solution</i> must deliver, enable and support the functionality to detect, automatically flag and report on, similar <i>records</i> from any <i>data</i> source. This functionality includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>a. <i>The Solution</i> resolving on similar attributed <i>entities</i> that meet the threshold of established resolution rules;</li> <li>b. <i>The Solution</i> matching (or associating) similar <i>records</i> that achieved a score range below that of the resolution threshold;</li> <li>c. <i>The Solution</i> flagging non-obvious relationships such as associations in the <i>data</i> that only become apparent when merged;</li> <li>d. <i>The Solution</i> flagging <i>entities</i> that meet the threshold of established resolution rules;</li> <li>e. <i>The Solution</i> providing a ranking or score of results as it pertains to the submitted criteria for person searches;</li> <li>f. <i>The Solution</i> detecting and finding paths between two selected <i>entities</i> to at least 3 <i>degrees of separation</i>;</li> <li>g. <i>The Solution</i> identifying the <i>entity</i> attributes that contributed to matching or resolution;</li> <li>h. <i>The Solution</i> reporting on the <i>entity</i> attributes that contributed to matching or resolution; and</li> <li>i. <i>The Solution</i> reporting on all attributes and source <i>records</i> that contributed to the resulting matching or resolution.</li> </ul> |
| M-54 | <p><i>The Solution</i> must deliver, enable and support the functionality to allow weighted thresholds based on one of more <i>indicators</i> entered as part of <i>configuration</i>. An <i>indicator</i> is a measureable factor assigned a value (numerical weight) that becomes a threshold. When the threshold is met attention is directed to the <i>indicator</i>. <i>Indicators</i> include, but are not limited to, an incident or type of event.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-55 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to add, remove, modify, control and manage <i>indicators</i> and/or thresholds and allow adjustments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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| M-56 | <p><i>The Solution</i> must deliver, enable and support the following <i>data visualization</i> functionalities:</p> <ul style="list-style-type: none"> <li>a. Display multiple objects on a page such as a table, chart, picture and text;</li> <li>b. Display a series of graphics and charts;</li> <li>c. Display 2D and 3D chart and graph visualizations;</li> <li>d. Display maps of geospatial <i>data</i> associated with location in geographic map form, and display variables in different intensifying colours, often referred to as heat mapping or thermal mapping;</li> <li>e. Display decomposition trees of each <i>drill-down</i> similar to an organization chart; and</li> <li>f. Provide filter options to focus on a specific crime-type or <i>entity</i> and to look at <i>data</i> in either detail or summary format.</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| M-57 | <p><i>The Solution</i> must deliver, enable and support the functionality for <i>Users</i> to manually create <i>entities</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| M-58 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to manually edit <i>entities</i>, links or other chart <i>data</i> within a visualization, without affecting the source <i>data</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-59 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to manually add links to the visualizations, and to add additional or <i>layered data</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| M-60 | <p><i>The Solution</i> must support the functionality to create and manage links to external <i>data</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|      | <p><b>Reporting</b><br/> This section addresses how <i>Users</i> create and use reports, <i>templates</i> and <i>ad-hoc</i> report creation, to produce outputs to allow exploring and sharing information.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| M-61 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to perform the following activities:</p> <ul style="list-style-type: none"> <li>a. Create, publish , modify and view <i>production reports</i>;</li> <li>b. Create, publish , modify and view <i>ad-hoc reports</i>;</li> <li>c. Create, publish modify and view <i>User-defined</i> (custom) reports;</li> <li>d. Create, publish, modify and view information queries; and</li> <li>e. Create, publish, modify and view <i>dashboards</i>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| M-62 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to create the following types of reports (as a minimum):</p> <ul style="list-style-type: none"> <li>a. Activity reports based on linkages of criminal organizations;</li> <li>b. Commodity reports that provide information on which criminal groups are linked to specific commodities; for example, the most prolific groups involved in mass marketing fraud;</li> <li>c. Time period reports based on time periods; for instance, reports on the most prolific type of fraud over a specific time period;</li> <li>d. Individual people report for instance, a list of individuals directly connected to specific crime types;</li> <li>e. Frequency reports based on the frequency of <i>entities</i> or elements such as Uniform Crime Codes (<i>UCR</i>), geographic or <i>temporal</i> factors, victim/target or suspect/offender descriptions, vehicle descriptions, operandi factors, evidence Information; and,</li> <li>f. Crime analysis, crime trends and long term trend analysis reports based on business rules, along with mapping of patterns, series, trends and hot spots.</li> </ul> |



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| M-63 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to publish reports directly to a report library as a minimum, in:</p> <ul style="list-style-type: none"> <li>a. Adobe <i>PDF</i> /A version 1.7 and later;</li> <li>b. Microsoft Office 2010 and above;</li> <li>c. HTML;</li> <li>d. XHTML 1.0 Strict and above; and</li> <li>e. Format compatible to interact with i2 <i>Analyst's Notebook</i>.</li> </ul> <p>A published report library is a repository containing <i>production reports</i> and <i>ad-hoc reports</i> intended for use by other <i>Users</i>. When a report is placed in a report library, it is considered to be a published report.</p> |
| M-64 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to apply watermarks or headers and footers to outputted reports to identify the reports with markings including “Copy”, “Confidential”, “Draft”, “Third Party Rule Applies”, “For Law Enforcement Only”, and other similar markings.</p>                                                                                                                                                                                                                                                                                                                                                                        |
| M-65 | <p><i>The Solution</i> must deliver, enable and support the functionality to allow the <i>bursting</i> of reports.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| M-66 | <p><i>The Solution</i> must deliver, enable and support the functionality to distribute reports by email using <i>MS Outlook</i> 2003 and above or <i>Novell GroupWise</i> Version 8 and above.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-67 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to run, publish and distribute reports that are:</p> <ul style="list-style-type: none"> <li>a. Using a single <i>data</i> source;</li> <li>b. Using multiple <i>data</i> sources;</li> <li>c. Time scheduled;</li> <li>d. <i>Ad-hoc</i>; and</li> <li>e. <i>Role (RBAC)</i> and <i>governance based</i>.</li> </ul>                                                                                                                                                                                                                                                                                            |
| M-68 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to create, save and use report <i>templates</i>.</p> <p>A <i>report template</i> is a standard formatted report building block that enables work groups to standardize the format, such as tabular and graphical formats, based on the <i>User's</i> preference and compliance with Departmental and external reporting formats.</p>                                                                                                                                                                                                                                                                           |
| M-69 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to run reports in the background while using other functionalities of the <i>Solution</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| M-70 | <p>The <i>Solution</i> must deliver, enable, support, and allow <i>Users</i> to create reports that use a variety of standard and custom graphical <i>data</i> representations, in colour, including but not limited to:</p> <ul style="list-style-type: none"> <li>a. Bar;</li> <li>b. Pie;</li> <li>c. Line;</li> <li>d. Frequency polygon;</li> <li>e. Histogram; and</li> <li>f. Time Line Charts.</li> </ul>                                                                                                                                                                                                                                                                           |

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| M-71 | <i>The Solution</i> must deliver, enable and support the functionality to <i>integrate</i> between reporting services, for instance, link chart to map plotting without the need to manipulate and re-run reports.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| M-72 | <p><i>The Solution</i> must deliver, enable, support and allow <i>Users</i> to:</p> <ol style="list-style-type: none"> <li><i>Drill down</i> through report results;</li> <li><i>Drill up</i> through report results ;</li> <li><i>Drill through</i> report results to details;</li> <li>Filter report results;</li> <li>Sort report results;</li> <li>Rank report results; and,</li> <li>Suppress report results.</li> </ol> <p>These actions can be done to help identify <i>networks, entities</i>, or other themes for specific targeted analysis.</p>                                                                                            |
| M-73 | <i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to view report information in <i>asymmetric</i> fashion. This requirement means allowing <i>Users</i> to display and hide underlying information by expanding or collapsing a report column or row, to display or hide detailed information.                                                                                                                                                                                                                                                                                                                                |
| M-74 | <i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to do <i>multi-dimensional sorting</i> of information in report usage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | <p><b>Information Management</b></p> <p>This section addresses how <i>the Solution</i> must use <i>IM</i> to direct and support the effective and efficient management of information in an organization from planning and systems development to disposal or long-term preservation.</p> <ul style="list-style-type: none"> <li>To meet legislative requirements</li> <li>To protect sensitive information</li> <li>To promote and facilitate the sharing of information</li> <li>To facilitate information retrieval</li> <li>To preserve corporate history</li> <li>To preserve and protect information critical to business continuity</li> </ul> |
| M-75 | <i>The Solution</i> must deliver, enable and support the functionality to tag <i>data</i> with purge dates through the <i>ETL</i> (extract, transform and load) process, as applicable, and apply purge dates to <i>created data</i> , as applicable, and to automatically purge the <i>data</i> from <i>the Solution</i> and associated <i>artifacts</i> when the purge date is met.                                                                                                                                                                                                                                                                 |
| M-76 | <p><i>The Solution</i> must deliver, enable and support the functionality to:</p> <ol style="list-style-type: none"> <li>Manage retention schedules on <i>records</i> including automated resets of schedules;</li> <li>Provide an automated means to dispose of <i>records</i> past their retention period; and</li> <li>Provide a means to <i>archive records</i>.</li> </ol>                                                                                                                                                                                                                                                                       |

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| M-77                                                                                                                                                                                                 | <p><i>The Solution</i> must deliver, enable and support the functionality to conduct change <i>data</i> capture with validation on the changed <i>data</i>. As information is updated at source, it must trigger the update. All updates must carry through to any derived <i>Solution</i> outputs.</p> <p>For instance, if a pardon, now called <i>record</i> suspension, is granted and an occurrence is hidden or information relating to the suspension is hidden from the <i>RMS</i> that associates an individual to a criminal organization, the association must be broken. All updates or additions must be verified and validated.</p> |
| M-78                                                                                                                                                                                                 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Administrators</i> to create, modify, publish, use, and manage <i>metadata</i> and create and manage <i>metadata</i> repositories.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| M-79                                                                                                                                                                                                 | <p><i>The Solution</i> must deliver, enable, support and allow a <i>User</i> to view the <i>metadata</i> information that is pertinent to each displayed <i>data</i> element on a report or on the <i>data</i> element or <i>entity</i>. <i>Metadata</i> includes, but is not limited to:</p> <ol style="list-style-type: none"> <li>The source of the <i>data</i>;</li> <li>The name of the submitter or contact person and contact details for the <i>data</i>;</li> <li>The date that the <i>record</i> was created; and,</li> <li>A summary, if available, of case(s) to which the <i>entity</i> or <i>data</i> are associated.</li> </ol>   |
| M-80                                                                                                                                                                                                 | <p><i>The Solution</i> must deliver, enable, support ,and allow a <i>User</i> to view <i>metadata</i> repository lineage in a report or on the <i>data</i> element name and will include:</p> <ol style="list-style-type: none"> <li>Source of <i>data</i>;</li> <li>Date of <i>data</i> source;</li> <li>Date the <i>data</i> was loaded into <i>The Solution</i>;</li> <li>How the <i>data</i> was calculated; and</li> <li>Description of the <i>data</i>.</li> </ol>                                                                                                                                                                         |
| M-81                                                                                                                                                                                                 | <p><i>The Solution</i> must deliver, enable and support functionality for <i>metadata</i> management to enable and allow <i>the Solution</i> and/or <i>Users</i> to:</p> <ol style="list-style-type: none"> <li>Create <i>metadata</i> from <i>User</i> upload/creation;</li> <li>Search <i>data</i> sets by <i>metadata</i>;</li> <li>Capture existing <i>metadata</i> from other systems;</li> <li>Store captured or created <i>metadata</i>; and</li> <li>Secure, reuse and publish technical and business <i>metadata</i> to map to source <i>data</i>, including to relational, flat file or <i>unstructured data</i> sources.</li> </ol>   |
| M-82                                                                                                                                                                                                 | <p><i>The Solution</i> must deliver, enable and support the functionality for <i>metadata</i> management to enable and allow <i>The Solution</i> and/or <i>Users</i> to: <i>sequester</i> and <i>unsequester</i> information subject to business rules. <i>Sequestering</i> and <i>unsequestering</i> will be applied subject to adding rules relating to the <i>Criminal Records Act</i> and the <i>Youth Criminal Justice Act</i>.</p>                                                                                                                                                                                                         |
| <b>Technical Environment Requirements</b>                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Overview</b></p> <p>This section identifies mandatory non-functional and functional technical environment requirements that must be in place for <i>the Solution</i> to work and includes:</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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|      | <ol style="list-style-type: none"> <li>1. Functional Integration</li> <li>2. System</li> <li>3. Performance</li> <li>4. Language</li> <li>5. Security</li> </ol> <p>The technical environment requirements identify key elements on how <i>the Solution</i> must look, what <i>the Solution</i> must have to run, how <i>the Solution</i> must perform and what standards <i>the Solution</i> must conform to. In addition, the requirements identify software, operating systems and other applications that <i>the Solution</i> must interoperate with.</p>                                                                                                            |
|      | <p><b>Functional Integration</b></p> <p>This section describes the single Graphical <i>User Interface (GUI)</i> where <i>data</i> flows seamlessly between all <i>components</i> of <i>the Solution</i> and how <i>data</i> flows between <i>components</i> is transparent to <i>Users</i>.</p>                                                                                                                                                                                                                                                                                                                                                                          |
| M-83 | <p><i>The Solution</i> must deliver, enable and support a single intuitive Graphical <i>User Interface (GUI)</i> that <i>integrates</i> all functionality and all <i>components</i> of <i>the Solution</i> in a single <i>User</i> interface.</p> <p><i>Users</i> must be able to switch between different tools and conduct all functions, from a single <i>GUI</i>. For example, <i>Users</i> must be able to conduct a query, and then view the results in a linkage chart, timeline, heat map, spreadsheet format or report format by clicking on a tab, or selecting from a drop down menu or some other menu option provided in the same <i>GUI</i> interface.</p> |
| M-84 | <p><i>The Solution</i> must deliver, enable, and support the functionality to seamlessly use the <i>collected and created data</i> across all <i>components</i> of <i>the Solution</i>, so that information processing and usage is <i>transparent</i> to the <i>User</i>.</p> <p>For instance, information displayed in a link chart can be viewed without <i>User</i> intervention in a <i>BI</i> report.</p>                                                                                                                                                                                                                                                          |
|      | <p><b>System</b></p> <p>This section addresses how <i>the Solution</i> must work and interact with Canada's technical environment, what is required for <i>the Solution</i> to run, and the standards it must comply with.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| M-85 | <p><i>The Solution</i> must deliver, enable and support the centralized deployment of all of <i>the Solution components</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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| M-86 | <p><i>The Solution</i> must work and interoperate as a secure web browser-based <i>Solution</i> that</p> <ol style="list-style-type: none"> <li>May include server plug-ins;</li> <li>May include browser plug-ins; and</li> <li>Does not require any other desktop software to be installed on the <i>User's</i> workstation other than a web browser.</li> </ol> <p>A secure web-based browser is one that uses Transport Sockets Layer (<i>TSL</i>) and cryptographic protocols for application-level <i>data</i> transmission purposes.</p> |
| M-87 | <p><i>The Solution</i> must work and interoperate with Java <i>Enterprise</i> Edition (Java EE) 6 and up, or .NET environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                              |
| M-88 | <p>The <i>Solution</i> must allow for all <i>backend components</i> to be fully supported on VMware vSphere / ESXi.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-89 | <p><i>The Solution</i> must fully support <i>backend components</i> by the following Hypervisors:</p> <ol style="list-style-type: none"> <li>Red Hat <i>Enterprise</i> Virtualization (RHEV) or</li> <li>KVM or</li> <li>Microsoft Windows Server Hyper-V</li> </ol>                                                                                                                                                                                                                                                                            |
| M-90 | <p><i>The Solution</i> must support <i>REST</i> (Representational State Transfer) for all HTTP/TLS integrations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                            |
| M-91 | <p><i>The Solution</i> must support JSON or XML <i>data</i> formats for transmitting <i>data</i> by using <i>REST</i> web services.</p>                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-92 | <p><i>The Solution</i> must provide clear online documentation of <i>REST APIs</i> with exception handling</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-93 | <p><i>The Solution</i> must provide <i>REST APIs</i> to store <i>customized</i> IDs against core objects for integration with other systems</p>                                                                                                                                                                                                                                                                                                                                                                                                 |
| M-94 | <p><i>The Solution</i> must comply with Extensible Hypertext Markup Language (XHTML) version 1.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| M-95 | <p><i>The Solution</i> must deliver, enable and support an <i>open architecture</i> and industry standards for <i>interoperability</i> with other <i>enterprise</i> systems.</p>                                                                                                                                                                                                                                                                                                                                                                |
| M-96 | <p><i>The Solution</i> must install, operate and work on one of the following Operating Systems for the hosting of all <i>backend components</i>:</p> <ul style="list-style-type: none"> <li>Windows Server 2012 or later, including 32 bit and 64 bit versions; or</li> <li>SUSE Linux <i>Enterprise</i> Server (SLES) 11- SP3 or later; or</li> <li>Red Hat RHEL AP 6.5 or later.</li> </ul>                                                                                                                                                  |
| M-97 | <p><i>The Solution</i> must fully support, in a highly available (<i>HA</i>) environment, one of the following Relational Database Management Systems (RDMS):</p> <ol style="list-style-type: none"> <li>Oracle v11g on Linux System z or later; or</li> <li>MS SQL Server 2008 and above.</li> </ol> <p><i>RCMP</i> will provide the <i>database</i>.</p>                                                                                                                                                                                      |
| M-98 | <p><i>The Solution</i> must work and interoperate with Microsoft Internet Explorer (IE) Version 10 and above, and 'Edge', the IE replacement.</p>                                                                                                                                                                                                                                                                                                                                                                                               |

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| M-99  | <i>The Solution</i> must be fully supported in an <i>air gap</i> or disconnected environment. Installation, <i>configuration</i> and licensing must not require a connection to a public <i>network</i> .                                                                                                                                                                                                                                                                                                                                 |
| M-100 | <i>The Solution</i> must support one of the following file systems: <ul style="list-style-type: none"> <li>a. NTFS; or</li> <li>b. Ext4; or</li> <li>c. Ext3; or</li> <li>d. Btrfs.</li> </ul>                                                                                                                                                                                                                                                                                                                                            |
| M-101 | All <i>Solution</i> workstation software <i>components</i> that run with a JRE must work, fully support, and be documented on JRE 1.7 or later.                                                                                                                                                                                                                                                                                                                                                                                           |
| M-102 | <i>The Solution</i> must deliver, enable and support functionality to: <ul style="list-style-type: none"> <li>a. Automatically copy, merge or replicate the application's <i>data</i> store in one environment to a second environment;</li> <li>b. Maintain <i>metadata</i> and all changes made to <i>data</i> elements within the application when replication takes place;</li> <li>c. Follow <i>IM</i> and change management methodologies throughout replication; and,</li> <li>d. Configure replication business rules.</li> </ul> |
| M-103 | <i>The Solution</i> must deliver, enable and support and allow the functionality to <i>integrate</i> with a 3 <sup>rd</sup> party <i>GIS</i> server.                                                                                                                                                                                                                                                                                                                                                                                      |
| M-104 | <i>The Solution</i> must support one of following application servers: <ul style="list-style-type: none"> <li>a. Java Application Server: <ul style="list-style-type: none"> <li>o WebLogic Application Server 12c or later; or</li> <li>o JBoss Enterprise Application Platform (JBoss EAP) Version 6 or later; or</li> <li>o WebSphere Application Server Version 7.0 or later; or</li> </ul> </li> <li>b. .NET Framework: <ul style="list-style-type: none"> <li>o Windows Server 2012 or later.</li> </ul> </li> </ul>                |
| M-105 | <i>The Solution</i> must support one of the following servers types: <ul style="list-style-type: none"> <li>a. <i>Apache</i>; or</li> <li>b. <i>IIS</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                        |
|       | <b>Performance</b><br>This section addresses the number of concurrent <i>Users</i> <i>the Solution</i> must handle.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| M-106 | <i>The Solution</i> must allow for up to 1,000 concurrent <i>Users</i> without degrading the performance of <i>the Solution</i> .                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-107 | <i>The Solution</i> must deliver and enable an instant (within 10 seconds) response to <i>User</i> requests to <i>the Solution</i> and provide loading information to <i>Users</i> if the response time is over 10 seconds when <i>the Solution</i> is accessing <i>big data</i> .                                                                                                                                                                                                                                                        |
|       | <b>Language</b><br>This section addresses the language requirements that <i>the Solution</i> must meet for <i>User</i> interaction with the <i>Solution</i> , and usage, display and capabilities of <i>the Solution</i> .                                                                                                                                                                                                                                                                                                                |

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| M-108 | The <i>Solution</i> must deliver, enable and support the functionality to <i>incorporate data</i> in both English and Canadian French languages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| M-109 | The <i>Solution</i> must deliver, enable, support, and allow <i>Users</i> to work and access all functionalities of <i>the Solution</i> in the official language of their choice (English and Canadian French), as specified in the <i>User's</i> preferences.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| M-110 | <p><i>The Solution</i> must comply with Treasury Board Information Technology Standard (TBITS) 3: Coded Character Set for Information Interchange - Implementation criteria, to allow <i>Users</i> to:</p> <ol style="list-style-type: none"> <li>1. Create;</li> <li>2. Modify;</li> <li>3. Save;</li> <li>4. Search for;</li> <li>5. Sort; and</li> <li>6. Retrieve</li> </ol> <p>content using the full character sets of both of Canada's official languages (English and Canadian French).<br/>Further information is available at: <a href="http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17251&amp;section=text">http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17251&amp;section=text</a>.</p> |
| M-111 | <i>The Solution</i> must include an <i>integrated User</i> self-help tutorial package in both official languages (English and Canadian French), with hard copy documentation and print capability.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-112 | <p><i>The Solution</i> must provide <i>Users</i> with online help information that is:</p> <ol style="list-style-type: none"> <li>a. Context sensitive;</li> <li>b. Indexed; and,</li> <li>c. Available in both official languages (English and Canadian French).</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| M-113 | The <i>Solution</i> must include the delivery of <i>User</i> documentation in both official languages (English and Canadian French).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| M-114 | The <i>Solution</i> must include the delivery of technical system documentation in English.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| M-115 | <p><i>The Solution</i> must deliver, enable and support the functionality to alphabetical sort French characters with accents.<br/><i>The Solution</i> must resolve a list and sort such as Bélanger, Bradson vs. Bradson, Bélanger.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| M-116 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Users</i> to change any information display from one official language (English and Canadian French) to another without:</p> <ol style="list-style-type: none"> <li>a. Having to log out and log back in; and</li> <li>b. Impacting their pre-selected global language setting.</li> </ol> <p>This requirement means that a <i>User</i> can switch between the English and Canadian French versions of any information display.</p>                                                                                                                                                                                              |
| M-117 | <i>The Solution</i> must deliver, enable and support functionality for error messages to be displayed in English and Canadian French in accordance with the <i>User's</i> selected language preference.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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| M-118 | <i>The Solution</i> must deliver, enable and support full UTF-8 standard compliance so that the English and Canadian French languages can install once and not require multiple installs for full language support,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|       | <p><b>Security</b></p> <p>This section addresses the security system needs of <i>the Solution</i> including the permissions <i>Users</i> and <i>Administrators</i> must have for <i>the Solution</i> to be secured.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-119 | <p><i>The Solution</i> must work and interoperate with:</p> <ul style="list-style-type: none"> <li>a. Microsoft Active Directory for Microsoft Server 2003 and above;</li> <li>b. Lightweight Directory Access Protocol (LDAP); to allow <i>Users</i> to re-use their login across multiple servers; and</li> <li>c. <i>User login so that</i> when a <i>User</i> logs in, the <i>User</i> gains access to the <i>Solution</i> functionalities and information they are authorized to use, without the need for any other login.</li> </ul>                                                                                                                                                                                                                                              |
| M-120 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Administrators</i> to:</p> <ul style="list-style-type: none"> <li>a. Assign, manage and report <i>User</i> and group access to individual <i>Solution components</i> and objects;</li> <li>b. Assign, manage and report <i>User</i> and group functionality rights, privileges and restrictions for assigned <i>components</i>;</li> <li>c. Assign, manage and report <i>User</i> and group information access rights, privileges and restrictions;</li> <li>d. Assign, manage and report <i>User</i> and group access to <i>metadata</i> properties; and</li> <li>e. Receive an <i>alert</i> when <i>records</i> were added, advising who modified the <i>record</i> and who accessed the <i>records</i>.</li> </ul> |
| M-121 | <p><i>The Solution</i> must deliver, enable, support, and allow <i>Administrator</i> management, establishment and creation of individual role-based <i>User</i> and group access rights, and governance-based access.</p> <p>An example of individual role-based information access is an <i>Administrator</i> assigning the right to an individual or a group of <i>RCMP</i> business manager(s) for access to a subset of departmental financial management information and to the manager's own organization and sub-organizations, while restricting access to financial management information pertaining to any other <i>RCMP</i> organization.</p>                                                                                                                               |
| M-122 | <i>The Solution</i> must deliver, enable and support the functionality for <i>record and field security</i> so <i>Users</i> may only access <i>data</i> they are authorized to see and that specified <i>fields</i> may be masked so those <i>fields</i> are not available to all <i>Users</i> of <i>the Solution</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| M-123 | <i>The Solution</i> must deliver, enable and support the functionality for secure web-browsing in order to protect <i>data</i> at the application-layer using Transport Sockets Layer (TSL) 1.2 and above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| M-124 | <i>The Solution</i> must deliver, enable and support the functionality to inform <i>Users</i> that a <i>hidden entity</i> exists and/or is linked to the search results, and to present <i>Users</i> with contact details for the source <i>data</i> holder, based on access rights.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



|       |                                                                                                                                                                                                                                                                                                                                                                                |
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| M-125 | <i>The Solution</i> must deliver, enable, and support the functionality to allow <i>Administrators</i> to partially block a group of <i>Users</i> from seeing elements within an <i>entity</i> or within various links based on <i>User</i> access rights.                                                                                                                     |
| M-126 | <i>The Solution</i> must deliver, enable, support, and allow <i>Administrators</i> to manage all <i>User</i> and security <i>components</i> from a single common security <i>model</i> and single <i>GUI</i> interface, across all <i>components</i> (authorization, authentication, and role- based access) of the <i>Solution</i> .                                          |
| M-127 | <i>The Solution</i> must deliver, enable and support the functionality to encode all <i>User</i> -accessible <i>data</i> , including, documents, <i>entities</i> , <i>metadata</i> etc., with their respective security levels to allow/restrict access throughout the information's <i>lifecycle</i> and through all parts of <i>the Solution</i> and all <i>data</i> layers. |
| M-128 | <i>The Solution</i> must be able to be configured to accept/read customized header variables for <i>User</i> login.                                                                                                                                                                                                                                                            |

## 2.2 Rated Functional and Technical Environment Requirements

This section addresses the rated requirements.

Rated requirements are scored, as indicated, with points awarded for each one successfully met, or partial points if partially met, as applicable, and 0 points if not met.

| Rated Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------|
| Functional Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | Points Rating Scale |
| <p>This section describes the rated functional requirements the <i>Solution</i> should deliver, enable and support and explains how <i>the Solution</i> should interact with <i>Users</i>. The rated functional requirements are organized into the following sections:</p> <ol style="list-style-type: none"> <li>1. <i>Intake</i> and Usage</li> <li>2. <i>Collaboration</i></li> <li>3. Search and Query</li> <li>4. <i>Alerts</i></li> <li>5. Analysis</li> <li>6. Reporting</li> <li>7. <i>Information Management</i></li> <li>8. Case Management</li> </ol> |  |                     |
| <b>Intake and Usage</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                     |

|      |                                                                                                                                                                                                                                                                                                                                      |                                                               |
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| R-1  | <i>The Solution</i> should automatically create/establish the links between <i>entities</i> that the <i>Solution</i> extracted from unstructured, <i>semi-structured</i> and structured content based on natural language rules/ <i>models</i> , and allow <i>Users</i> to edit and make changes.                                    | 10 points if requirement is met.                              |
| R-2  | <i>The Solution</i> should deliver, enable and support the functionality to upload structured and fillable forms to automatically populate with information previously captured on forms and update existing information.                                                                                                            | 10 points if the requirement is met                           |
| R-3  | <i>The Solution</i> should deliver, enable and support the functionality to design, <i>customize</i> , and update document <i>templates</i> , and enable the system to use any of the document <i>templates</i> in reports.                                                                                                          | 10 points if requirement is met.                              |
| R-4  | <i>The Solution</i> should deliver, enable, support and allow <i>Users</i> to <i>redact</i> information including, but not limited to, <i>entity</i> information, documents and reports.                                                                                                                                             | 10 points if requirement is met                               |
|      | <b>Collaboration</b>                                                                                                                                                                                                                                                                                                                 |                                                               |
| R-5  | <i>The Solution</i> should provide <i>Users</i> with <i>interoperability</i> with existing or partner implementations, including email and/or <i>RMS</i> systems.                                                                                                                                                                    | 5 points if requirement is met                                |
|      | <b>Search and Query</b>                                                                                                                                                                                                                                                                                                              |                                                               |
| R-6  | <i>The Solution</i> should deliver, enable and support the functionality to filter the search results that meet the search criteria.                                                                                                                                                                                                 | 5 points if requirement is met                                |
|      | <b>Alerts</b>                                                                                                                                                                                                                                                                                                                        |                                                               |
| R-7  | <i>The Solution</i> should deliver, enable, support and allow <i>Users</i> to create, publish, modify and use <i>alerts</i> based on a phrase, and provide a link to the location where the phrase was identified.                                                                                                                   | 2 points if requirement is met                                |
|      | <b>Analysis</b>                                                                                                                                                                                                                                                                                                                      |                                                               |
| R-8  | <i>The Solution</i> should deliver, enable, and support the functionality to identify and use location <i>data</i> :<br>a. To find out where an <i>entity</i> travels, frequency, duration, mode of transportation, routes taken, and subsequent destinations of travel;<br>b. To find out relationships; for instance, who was met. | 10 points if a. and b. are met and 5 points if only a. is met |
| R-9  | <i>The Solution</i> should deliver, enable, and support the geocoding of newly entered <i>records</i> through point and click on a map or through an internal or external geocoder.                                                                                                                                                  | 10 points if requirement is met                               |
| R-10 | <i>The Solution</i> should deliver, enable, and support the functionality to:<br>a. Analyze web traffic and email logs when obtained from service providers; and<br>b. Detect relationships between <i>IP</i> addresses, events and <i>data</i> such as cookies.                                                                     | 6 points if a. and b. are met<br>3 points if only a. is met   |
| R-11 | <i>The Solution</i> should deliver, enable and support the functionality to provide                                                                                                                                                                                                                                                  | 5 points if                                                   |

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|      | reliable metrics on <i>social media data</i> received, such as discussion volume, top authors, top sites, etc., in a <i>User-friendly dashboard</i> .                                                                                                                                                                                                                                                                                                                                                                      | requirement is met                                            |
| R-12 | <p><i>The Solution</i> should deliver, enable, and support:</p> <ul style="list-style-type: none"> <li>a. Map-based search within a geofence;</li> <li>b. Plotting <i>User</i>-selected <i>entities</i> on a map;</li> <li>c. Ability to <i>drill down</i> when clicking on a map and accessing the underlying <i>record</i>;</li> <li>d. Ability to view a publication tile including the image, date and time stamp;</li> <li>e. Option to highlight on the map; and</li> <li>f. Ability to save the results.</li> </ul> | 2 points for each item met                                    |
| R-13 | <i>The Solution</i> should deliver, enable and support the functionality to <i>intake</i> , use, manage and analyze <i>data</i> received from open source <i>social media networks</i> ; including, Twitter, Facebook, Instagram, LinkedIn, Tumblr, Yik Yak; for keywords, concepts and geo-location topics.                                                                                                                                                                                                               | 2 points for each social media <i>network</i> shown in list   |
| R-14 | <i>The Solution</i> should deliver, enable and support the functionality to identify top (author) influencers on key <i>social media networks</i> , including Twitter and Yik Yak based on relevancy, reach and impact.                                                                                                                                                                                                                                                                                                    | 2 points if the requirement is met.                           |
|      | <b>Reporting</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                               |
| R-15 | <p><i>The Solution</i> should deliver, enable and support the functionality to:</p> <ul style="list-style-type: none"> <li>a. Create a report showing the evaluated <i>metadata</i>; and</li> <li>b. Grade information that identifies source reliability and content validity.</li> </ul>                                                                                                                                                                                                                                 | 10 points if a. and b. are met<br>5 points if a. or b. is met |
|      | <b>Information Management</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                               |
| R-16 | <i>The Solution</i> should deliver, enable and support an end-to-end view of <i>Solution metadata</i> . An <i>end-to-end view of metadata</i> allows <i>Users</i> to store, view and link the description and attributes of each <i>data</i> element and calculated measure, as defined from any <i>data</i> source through to presentation of the information to <i>Users</i> .                                                                                                                                           | 10 points if requirement is met.                              |
| R-17 | <i>The Solution</i> should deliver, enable, support, and allow <i>Users</i> to define and share <i>metadata</i> calculations and retrieve the results through search.                                                                                                                                                                                                                                                                                                                                                      | 10 points if requirement is met                               |
|      | <p><b>Case Management</b></p> <p>This section addresses how <i>the Solution</i> should have the capability to create workflows, track cases through the case <i>lifecycle</i> and deliver other case management functionality.</p>                                                                                                                                                                                                                                                                                         |                                                               |
| R-18 | <i>The Solution</i> should deliver, enable and support the functionality to create, search for, modify and save a case or different types of cases: both manually and automatically as a result of reaching thresholds.                                                                                                                                                                                                                                                                                                    | 1 point if requirement is met                                 |
| R-19 | <i>The Solution</i> should deliver, enable and support the functionality to create                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 point if                                                    |

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|      | any number and type of case workflows based on business rules that guide work steps and activities, including flagging high risk cases, approvals etc.                                                                                                                                                                                                                                                                                                                                                                                                                          | requirement is met             |
| R-20 | <i>The Solution</i> should include an <i>integrated</i> workflow design wizard tool to allow developing and maintaining any number of automated and manual, simple and complex, case centric workflows.                                                                                                                                                                                                                                                                                                                                                                         | 1 point if requirement is met  |
| R-21 | <i>The Solution</i> should deliver, enable, support, and allow group members to interact with the case and track the case as it transitions and progresses through stages of the case <i>lifecycle</i> , subject to role assignment. <i>Users</i> must be able to sort and filter the contents of their work queue based on work assigned to them or specific instructions, and take action on the most critical ones first.                                                                                                                                                    | 1 point if requirement is met  |
| R-22 | <i>The Solution</i> should deliver, enable and support the functionality to monitor work queues and to define approval points within the workflow subject to configurable rules (including risk level, priority etc.).                                                                                                                                                                                                                                                                                                                                                          | 1 point if requirement is met  |
| R-23 | <i>The Solution</i> should deliver, enable and support the functionality to allow a change to the display status of a case, or a case type.                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 point if requirement is met  |
| R-24 | <i>The Solution</i> should deliver, enable and support the functionality to manage oversight and track involvement of individuals and work progress through the entire case <i>lifecycle</i> , based on configurable points of oversight (including but not limited to for progress, approvals, etc.).                                                                                                                                                                                                                                                                          | 1 point if requirement is met  |
| R-25 | <i>The Solution</i> should deliver, enable and support the functionality to facilitate <i>collaboration</i> and interaction of <i>User</i> groups at various levels of classification and within the context of a case assignment such as virtual workspace, or case-specific messaging or document management.                                                                                                                                                                                                                                                                 | 1 point if requirement is met  |
| R-26 | <i>The Solution</i> should deliver, enable and support the functionality to define and <i>customize</i> casework through configurable and re-usable case <i>templates</i> : including but not limited to deliverable <i>templates</i> , team <i>collaboration models</i> , tooling <i>models</i> , approval <i>templates</i> , task <i>templates</i> , priority <i>models</i> and virtual workspaces. A particular case may be initiated based on a combination of these <i>templates</i> leading to a case and workspace environment that is specialized for the work at hand. | 1 point if requirement is met  |
| R-27 | <i>The Solution</i> should deliver, enable and support the functionality to cross-reference cases between one case and one or more other cases and to establish a parent-child relationship between them.                                                                                                                                                                                                                                                                                                                                                                       | 1 point if requirement is met  |
| R-28 | <i>The Solution</i> should deliver, enable and support the functionality to alter case milestones on a case by case basis after the case has been initiated.                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 points if requirement is met |
| R-29 | <i>The Solution</i> should deliver, enable and support the functionality to track changes to case information at the <i>record</i> level and at the <i>field</i> level.                                                                                                                                                                                                                                                                                                                                                                                                         | 1 point if requirement is met  |

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| R-30                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should deliver, enable and support the functionality to configure rules for resource management to manually or automatically assign resources, as required.                                                                                                                                                          | 1 point if requirement is met      |
| R-31                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should deliver, enable and support the functionality to manually and automatically re-assign a case to another <i>User</i> based on the information gathered in the case, steps arrived at in the case, etc.                                                                                                         | 1 point if requirement is met      |
| R-32                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should deliver, enable and support the functionality to define what other <i>Users</i> will have access to a case. <i>The Solution</i> should have the ability to allow <i>Users</i> to assign a security classification to a case or document and restrict <i>Users</i> who can access and view a case or document. | 1 point if requirement is met      |
| R-33                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should deliver, enable and support the functionality to allow authorized <i>Users</i> to delete, or archive a case, to reopen or modify a closed case, and to close a case at anytime during the workflow prior to completion depending upon <i>role-based access</i> permissions.                                   | 1 point if requirement is met      |
| <b>Technical Environment Requirements</b>                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                          | <b>Points Rating Scale</b>         |
| <p>This section describes the rated technical environment requirements the <i>Solution</i> should deliver, enable and support. The rated technical environment requirements are organized into the following sections:</p> <ol style="list-style-type: none"> <li>1. System</li> <li>2. Language</li> <li>3. Security</li> </ol> |                                                                                                                                                                                                                                                                                                                                          |                                    |
|                                                                                                                                                                                                                                                                                                                                  | System                                                                                                                                                                                                                                                                                                                                   |                                    |
| R-34                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should support JSON and XML data formats for data transmitting.                                                                                                                                                                                                                                                      | 10 points if requirement is met.   |
| R-35                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should comply with SOAP (Simple Object Access Protocol) protocol using the Web Services Description Language (WSDL) version 1.1.                                                                                                                                                                                     | 10 points if requirement is met.   |
| R-36                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should manage versioning of <i>configuration</i> and release management.                                                                                                                                                                                                                                             | 10 points if requirement is met.   |
| R-37                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should support WebLogic Application Server 12c or higher as an application server.                                                                                                                                                                                                                                   | 10 points if requirement is met    |
| R-38                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should have the capability to have a cloud-based service.                                                                                                                                                                                                                                                            | 5 points if the requirement is met |
| R-39                                                                                                                                                                                                                                                                                                                             | <i>The Solution</i> should deliver, enable, support, and allow <i>Users</i> to access all of                                                                                                                                                                                                                                             | 5 points if                        |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                           |
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|      | the <i>Solution's</i> functionalities on a native mobile application.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | requirement is met.                                       |
| R-40 | <p><i>The Solution</i> should conform to and support Government of Canada Standards including</p> <ul style="list-style-type: none"> <li>a. Standard on Web Accessibility, <a href="http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=23601">http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=23601</a> ;</li> <li>b. Standard on Web <i>Interoperability</i>, <a href="http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=25875&amp;section=text">http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=25875&amp;section=text</a>; and,</li> <li>c. Standard on web Usability. <a href="http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=24227">http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=24227</a></li> </ul> | 2 points if the requirement is met                        |
| R-41 | <i>The Solution</i> should work and interoperate with Microsoft Exchange Server 2003 and above for messaging and <i>collaboration</i> services.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 points if requirement is met                            |
| R-42 | <i>The Solution</i> should interoperate with MS SharePoint 2010 and above for <i>collaboration</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2 points if the requirement is met.                       |
| R-43 | <p><i>The Solution</i> should interoperate with:</p> <ul style="list-style-type: none"> <li>a. Google Chrome, version 17 or above,</li> <li>b. Mozilla Firefox, version 10 or above, and</li> <li>c. Safari, version 6 or above.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 points for each browser supported from list             |
|      | <b>Language</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                           |
| R-44 | <i>The Solution</i> should deliver, enable and support the functionality for cross-language search for instance, when searching on an English term results are provided in the source official language (English and/or Canadian French).                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 points if requirement is met.                           |
|      | <b>Security</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                           |
| R-45 | <i>The Solution</i> should deliver, enable, support, and allow <i>Administrators</i> to entirely block a group of <i>Users</i> from seeing that an <i>entity</i> exists or has links.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10 points if requirement is met.                          |
| R-46 | <i>The Solution</i> should deliver, enable, support, and allow authorized <i>Users</i> to <i>anonymize data</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 points if requirement is met.                          |
| R-47 | <i>The Solution</i> should deliver, enable, and support the functionality to encrypt <i>data</i> outputs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10 points if requirement is met.                          |
| R-48 | <p><i>The Solution</i> should deliver, enable and support the functionality to:</p> <ul style="list-style-type: none"> <li>a. Identify that a message was created by a known sender, so that the sender cannot deny having sent the message (authentication and non-repudiation); and</li> <li>b. Confirm that the message was not altered in transit (integrity).</li> </ul>                                                                                                                                                                                                                                                                                                           | 6 points if a. and b. are met. 3 points if only a. is met |
| R-49 | <i>The Solution</i> should deliver, enable and support the functionality to provide notification by email, to authorized <i>Users</i> , when flagged <i>records</i> are accessed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5 points if requirement is met                            |
| R-50 | <i>The Solution</i> should deliver, enable, support, and allow authorized <i>Users</i> to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 points if                                               |

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|      | <i>anonymize data</i> that cannot be reconstituted into a "readable" format.                                                                                                                                                                                                                                                           | requirement is met.                 |
| R-51 | <p><i>The Solution</i> should deliver, enable and support the functionality to manage an external authentication to the <i>Solution</i>:</p> <ul style="list-style-type: none"> <li>a. Using simple text <i>SAML</i> 2.0, or</li> <li>b. Providing an open framework where a 3rd party can develop a custom authentication.</li> </ul> | 5 points if either a. or b. is met. |

### 3. MANAGEMENT

The following are **Mandatory** Management Requirements.  
Mandatory requirements are evaluated as Met/Not Met.

#### 3.1 Mandatory Management Requirements

|       | Management Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|       | <p>Overview</p> <p>The Management Requirements include the following sections:</p> <ol style="list-style-type: none"> <li>1. Project References</li> <li>2. Project Requirements</li> <li>3. Training Requirements</li> <li>4. Professional Services</li> </ol>                                                                                                                                                                                                                                                                                                                                        |
|       | <b>Project References</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| M-129 | <p>The Bidder must provide a detailed description of 2 projects where <i>the Solution</i> has been deployed to a minimum of 200 <i>Users</i> in a policing/criminal <i>intelligence</i> environment, and was in use in a production environment for at least 1 year within 3 years of the closing date of this bid solicitation. The description of each project, as a minimum, must include the following:</p> <ul style="list-style-type: none"> <li>• The Bidder's Deliverables;</li> <li>• <i>The Solution</i> functionality; and</li> <li>• The Bidder's role and approach.</li> </ul>            |
| M-130 | <p>The Bidder must describe in detail, 2 projects where the Bidder and/or Sub-contractor have delivered, within the last 3 years of the closing date of this bid solicitation, the following professional services, for each of the projects:</p> <ul style="list-style-type: none"> <li>• Delivered, installed, <i>configured</i>, <i>customized</i>, <i>integrated</i>, and deployed <i>the Solution</i> in a policing/criminal <i>intelligence</i> environment; and</li> <li>• Provided training to project team, <i>Users</i>, Trainer(s), and <i>Administrator(s)</i>.</li> </ul>                 |
|       | <b>Project Requirements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|       | <p>Proposed Implementation Plan</p> <p>Assume the following for the proposed implementation plan:</p> <ul style="list-style-type: none"> <li>• The baseline <i>Solution</i> (out-of-the-box) was installed in the <i>RCMP's</i> technical development environment by the <i>RCMP</i> during the Proof-of-Proposal Test;</li> <li>• Data from a <i>structured data</i> warehouse, and unstructured or <i>semi-structured data</i> from 3 other disparate <i>data</i> sources; and</li> <li>• A criminal <i>intelligence</i> based <i>User</i> community of approximately 2,400 <i>Users</i>.</li> </ul> |



|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| M-131 | <p>The Bidder must provide a proposed Implementation Plan that describes the following for each project stage identified in Table 1-1 Annex C - Statement of Work:</p> <ul style="list-style-type: none"> <li>• Approach;</li> <li>• Resource categories and approximate number of resources required; and</li> <li>• Estimated timing for completion.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|       | <p><b>Training Requirements</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| M-132 | <p>The Bidder and/or Sub-contractor must have <i>commercially available or in-house</i> developed, <i>Instructor-led training</i> and documentation for <i>Administrator</i> training, in English.</p> <p><i>Administrator</i> training and documentation must address each of the following elements:</p> <ul style="list-style-type: none"> <li>• How to install and <i>configure the Solution</i>;</li> <li>• How to apply patches and upgrades;</li> <li>• How to configure <i>the Solution</i> to include additional <i>data</i> sources;</li> <li>• How to operate the system (security monitoring, backups, performance monitoring and tuning);</li> <li>• How to recover from failures;</li> <li>• How to administer <i>the Solution</i> (<i>User</i> account management, security management); and</li> <li>• How to set-up the audit function in <i>the Solution</i>.</li> </ul> |
| M-133 | <p>The Bidder and/or Sub-contractor must have <i>commercially available or in-house</i> developed, <i>Instructor-led training</i> and documentation for <i>User</i> training in English and French.</p> <p><i>User</i> training and associated documentation must address each of the following elements:</p> <ul style="list-style-type: none"> <li>• How to navigate within the <i>components</i> of the <i>Solution</i>; and</li> <li>• How to use the <i>Solution's</i> functionality and features.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         |
|       | <p><b>Professional Services</b></p> <p>For each Resource Category identified, the Bidder must provide résumés of 2 resources that meet the mandatory requirements.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|       | <p><b>Team Lead</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| M-134 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirements of the Team Lead:</p> <ol style="list-style-type: none"> <li>A minimum of 3 years within the past 5 years of demonstrated experience leading projects related to the implementation of an <i>analytics Solution</i>;</li> <li>A minimum of 1 project within the past 5 years of demonstrated experience in preparing plans, charts, tables, and diagrams to assist in analyzing and monitoring project tasks and progress;</li> </ol>                                                                                                                                                                                                                                                                                                                                              |

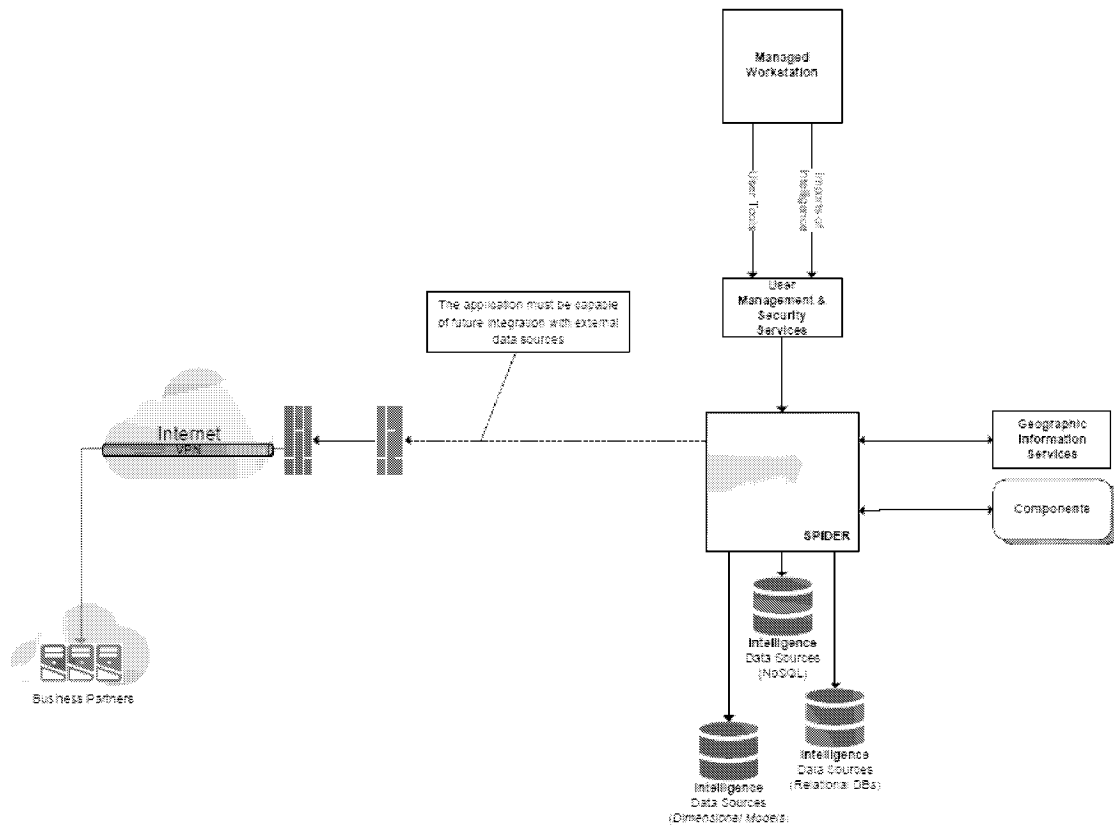
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | <ul style="list-style-type: none"> <li>c. A minimum of 1 project within the past 5 years of demonstrated experience in formulating statements of risks and/or problems and establishing mitigating procedures to resolve these risks and/or problems;</li> <li>d. A minimum of 1 project within the past 5 years of demonstrated experience in preparing status reports and holding regular status meetings; and</li> <li>e. A minimum of 1 project within the past 5 years of demonstrated experience leading the implementation of <i>the Solution</i> in a policing/criminal <i>intelligence</i> environment.</li> </ul>                                                                                                                                                                                                            |
|       | <b>Application Architect</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| M-135 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirements of the Application Architect:</p> <ul style="list-style-type: none"> <li>a. A minimum of 3 years within the past 5 years of demonstrated Application Architect experience in the implementation of an <i>analytics Solution</i>; and</li> <li>b. A minimum of 1 project within the past 5 years of demonstrated experience in the integration of all aspects of installation, <i>configuration</i>, <i>data intake</i>, <i>data</i> migration, testing, and deployment of <i>the Solution</i> in a policing/criminal <i>intelligence</i> environment.</li> </ul>                                                                                                                                                               |
|       | <b>Product Specialist</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| M-136 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirements of the Product Specialist:</p> <ul style="list-style-type: none"> <li>a. A minimum of 3 years within the past 5 years of demonstrated experience in the implementation of <i>the Solution</i> in a policing/criminal <i>intelligence</i> environment;</li> <li>b. A minimum of 1 project within the past 5 years of demonstrated experience installing, configuring, <i>integrating</i>, assisting in <i>data</i> migration, testing and deploying and supporting <i>the Solution</i> to meet client business needs in a policing/criminal <i>intelligence</i> environment; and</li> <li>c. A minimum of 1 project within the past 5 years of demonstrated experience transferring knowledge to client's resources.</li> </ul> |
|       | <b>Developer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| M-137 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirements of the Developer:</p> <ul style="list-style-type: none"> <li>a. A minimum of 1 project within the past 5 years of demonstrated experience in developing functional and system design specifications and in-depth knowledge of software development techniques for the <i>Solution</i> implemented in a policing/criminal <i>intelligence</i> environment; and</li> <li>b. A minimum of 1 project within the past 5 years of demonstrated experience developing, maintaining, <i>integrating</i>, assisting in <i>data</i> migration, testing, supporting and working with the functional <i>components</i> of the <i>Solution</i>.</li> </ul>                                                                                  |
|       | <b>Data Analyst</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M-138 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirements of the Data Analyst:</p> <ul style="list-style-type: none"> <li>a. A minimum of 3 years within the past 5 years of demonstrated technical expertise regarding <i>data</i> models, <i>database</i> design development, <i>data</i> mining, and segmentation techniques;</li> <li>b. A minimum of 1 project within the past 5 years of demonstrated experience in collecting, organizing, analyzing, and disseminating significant amounts of information with attention to detail and accuracy;</li> <li>c. A minimum of 1 project within the past 5 years of demonstrated experience in defining new <i>database</i> structures, <i>data</i> conversion strategies, <i>database</i> conversion specifications, and finalizing conversion strategies; and</li> <li>d. A minimum of 1 project within the past 5 years of demonstrated experience in developing and implementing procedures that will ensure the accuracy, completeness, and timeliness of <i>data</i> stored in the Solution.</li> </ul> |
|       | <b>Trainers</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|       | <b>Technical Trainer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| M-139 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirement of the Technical Trainer:</p> <ul style="list-style-type: none"> <li>• A minimum of 2 projects within the past 5 years of demonstrated experience delivering <i>instructor-led Administrator</i> training of <i>the Solution in English</i>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|       | <b>User Trainer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| M-140 | <p>The Bidder must identify and supply the résumés of 2 individuals who meet the following requirements of the User Trainer:</p> <ul style="list-style-type: none"> <li>a. A minimum of 2 projects within the past 5 years of demonstrated experience delivering <i>instructor-led</i> train-the-trainer and <i>User</i> training of <i>the Solution</i> in a policing/criminal <i>intelligence</i> environment; and</li> <li>b. Must be bilingual and able to communicate and deliver training in both official languages of Canada.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 4. TECHNICAL ENVIRONMENT

Diagram 4.1-1 shows where the *Solution* fits into the environment and connections to the *Solution*. Table 4.2-1 summarizes what is required for the *Solution* to run in the technical environment.

### 4.1 Diagram 4-1



### 4.2 Technical Environment Summary

**Table 4-1 RCMP System Summary**

**System**

1. *Enterprise* Server(32 bit and 64 bit version):
  - Windows Server 2012 or higher;
  - SUSE Linux *Enterprise* Server (SLES) 11-SP3 or higher; and,
  - Red Hat Linux (RHEL) version 6.5 or higher.
2. File System:
  - NTFS;
  - Ext4 and/or Ext 3; and,
  - Btrfs.
3. Relational Database Management System (RDBMS):
  - Oracle Database 10g and higher; and,
  - Microsoft SQL Server 2012 and higher.
4. Exchange Server:
  - Microsoft Exchange Server 2003 or higher.
5. Web Services:
  - *REST*; and,
  - *JSON* or *XML data* formats for transmitting *data*.
6. Development Language:
  - Java *Enterprise* Edition (Java EE) 6 or higher;
  - .NET;
  - JRE 1.7 or higher on *RCMP* workstation; and,
  - Extensible Hypertext Markup Language (XHTML).
7. Supported browser by web based software:
  - Internet Explorer (IE) 10 or higher, and Edge(IE 11) at least;
  - Firefox version 10 or above;
  - Chrome version 17 or above; and,
  - Safari version 6 or above.
8. Antivirus Software:
  - McAfee Antivirus 8 or higher.
9. Virtual Machine:
  - VMware vSphere; and,
  - ESXi.
10. Software Capability:
  - A single intuitive Graphical *User* Interface (*GUI*) to *integrate* all functions and allow *Users* to seamlessly switch between tools and functions.
11. Application Server:
  - WebLogic Application Server 12c or higher.

## 5. GLOSSARY of TERMS, ACRONYMS and ABBREVIATIONS

| ITEM                           | DEFINITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>3 degrees of separation</i> | In a <i>network</i> , the connection to a point, with two points between the first and the last.                                                                                                                                                                                                                                                                                                                                                                                                     |
| ACIIS                          | Automated Criminal Intelligence Information System                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>ad-hoc</i>                  | Without planning, as needed for immediate use                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <i>ad-hoc report</i>           | A report run by a <i>User</i> , as needed, using filters or query selections to achieve desired output                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>Administrator</i>           | Someone who manages or carries out the tasks necessary to run the tool or system.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>air gap</i>                 | A security measure implemented for computers, computer systems or <i>networks</i> requiring airtight security without the risk of compromise or disaster.                                                                                                                                                                                                                                                                                                                                            |
| <i>alert</i>                   | An indication, audio or visual, to a <i>User</i> that a predefined event has occurred or a selected operation or event is about to occur.                                                                                                                                                                                                                                                                                                                                                            |
| <i>Analyst</i>                 | A role within the <i>RCMP</i> that will have a role-based access defined within the <i>Solution</i> .                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>analytics</i>               | Information resulting from the systematic analysis of data or statistics.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>anonymize</i>               | To make anonymous, especially by removing or preventing access to names.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| API                            | Application Programming Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>archive</i>                 | Preserve for archival appraisal in accordance with Library and Archives Canada.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>artifacts</i>               | Any <i>data</i> object made with a view to subsequent use.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>asymmetric</i>              | Displaying or hiding underlying roll up information by expanding or collapsing a report column or row                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>Auditor</i>                 | A role within the <i>RCMP</i> that will have a role-based access defined within the <i>Solution</i> .                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>backend</i>                 | Serves and supports the <i>frontend</i> services usually by being closer to the application and communicating with the application. May act as an intermediate program to mediate <i>frontend</i> and <i>backend</i> activities.                                                                                                                                                                                                                                                                     |
| BI                             | Business Intelligence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>big data</i>                | Extremely large <i>data</i> sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions. Massive volumes of <i>data</i> in a variety of nonstandard formats that are processed at a high velocity.                                                                                                                                                                                                                |
| <i>bursting</i>                | Refers to delivery of a report or parts of a report to multiple <i>Users</i> for example a <i>User</i> will receive only the information relevant to that <i>User</i> and a manager will receive other information relevant to the manager role                                                                                                                                                                                                                                                      |
| <i>business unit</i>           | A <i>business unit</i> may be a branch, a sector, a directorate, or a division.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CISC                           | Criminal Intelligence Service Canada                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <i>Collaboration</i>           | The capability of the <i>Solution</i> to enable and support communication and the sharing of information ensuring information flows across all <i>components</i> and updates all <i>components</i> of the <i>Solution</i> at the same time, and provides information sharing capability to all <i>Users</i> , depending upon access permissions granted so that <i>Users</i> have the ability to act upon that information and communicate with other <i>Users</i> from within the <i>Solution</i> . |
| <i>collected and created</i>   | Data collected on <i>intake</i> into the <i>Solution</i> from any source and then changed or updated in any way to become <i>created data</i> for further use in the <i>Solution</i> .                                                                                                                                                                                                                                                                                                               |

| ITEM                               | DEFINITION                                                                                                                                                                                                                                                                                |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>commercially available</i>      | Training that is available, licensed or sold to the general public and requires no special or minimal modification over the training life-cycle                                                                                                                                           |
| <i>component</i>                   | A constituent element, as of a system, such as <i>Business Intelligence (BI)</i> or search, within the <i>Solution</i> .                                                                                                                                                                  |
| <i>configuration</i>               | Refers to the activity of making changes to out-of-the-box functionality that are achieved through a point and click tool. <i>User configurations</i> have the effect of publishing changes that make them available throughout the application.                                          |
| <i>created data</i>                | See <i>collected and created</i> .                                                                                                                                                                                                                                                        |
| <i>criminal network</i>            | A group of people or organizations that are closely connected and work with each other for <i>criminal</i> purposes.                                                                                                                                                                      |
| <i>Criminal Records Act</i>        | R.S.C., 1985, c. C-47                                                                                                                                                                                                                                                                     |
| <i>customize</i>                   | The development of specific extensions that need to be coded to produce functionality that cannot be delivered by using <i>configuration</i> .                                                                                                                                            |
| <i>dashboard</i>                   | An intuitive graphical display of information on performance trends, forecasts, and metrics and uses Key Performance <i>Indicators (KPI)</i> and graphical images to convey meaning.                                                                                                      |
| <i>data</i>                        | Information.                                                                                                                                                                                                                                                                              |
| <i>data artifacts</i>              | <i>Created data</i> .                                                                                                                                                                                                                                                                     |
| <i>data mining</i>                 | The technique of identifying patterns and establishing relationships                                                                                                                                                                                                                      |
| <i>data visualization</i>          | A general term that describes any effort to help people understand the significance of <i>data</i> by placing it in a visual context. Patterns, trends and correlations that might go undetected in text-based <i>data</i> can be exposed and recognized with <i>data visualization</i> . |
| <i>domain</i>                      | Where business rules and logic resides and <i>domain models</i> are defined                                                                                                                                                                                                               |
| <i>drill down</i>                  | To examine information values at a summary aggregated level by clicking on it to view the underlying information at a lower aggregated level.                                                                                                                                             |
| <i>drill through</i>               | To examine the <i>metadata</i> information associated with a displayed information item by hovering over and selecting the value, metric or selection                                                                                                                                     |
| <i>drill up</i>                    | To examine information values at a given aggregated level by viewing rolled up information at a higher aggregated level.                                                                                                                                                                  |
| <i>EDW</i>                         | Enterprise Data Warehouse                                                                                                                                                                                                                                                                 |
| <i>end-to-end view of metadata</i> | View of an <i>enterprise data model</i> to minimize conflicts and duplication and tacking lineage                                                                                                                                                                                         |
| <i>enterprise</i>                  | Across the whole organization.                                                                                                                                                                                                                                                            |
| <i>entity</i>                      | Entity: Is a particular and discreet unit. A term used within the <i>RCMP</i> to identify information such as a person, location, phone, vehicle, credit card number etc.                                                                                                                 |
| <i>ETL</i>                         | Extract, Transform and Load                                                                                                                                                                                                                                                               |
| <i>GIS server</i>                  | A server for sharing maps, globes, address locators, geodatabases, and tools, to allow client applications to use and interact with the resources.                                                                                                                                        |
| <i>GUI</i>                         | Graphical User Interface                                                                                                                                                                                                                                                                  |
| <i>field</i>                       | A <i>data</i> structure for a single piece of <i>data</i> .                                                                                                                                                                                                                               |
| <i>frontend</i>                    | <i>Users</i> interact directly with that part of an application                                                                                                                                                                                                                           |
| <i>HA</i>                          | Highly Available                                                                                                                                                                                                                                                                          |

| ITEM                             | DEFINITION                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>hidden entity</i>             | An <i>entity</i> restricted from view by authorized access                                                                                                                                                                                                                                                                                             |
| <i>IM</i>                        | <i>Information Management</i>                                                                                                                                                                                                                                                                                                                          |
| <i>Information Management</i>    | A discipline that directs and supports effective and efficient management of information in an organization, from planning and systems development to disposal and/or long-term preservation.                                                                                                                                                          |
| <i>incorporate</i>               | To include something as part of something larger                                                                                                                                                                                                                                                                                                       |
| <i>indicator</i>                 | A measureable factor assigned a value (numerical weight) that becomes a threshold.                                                                                                                                                                                                                                                                     |
| <i>in-house</i>                  | Created, done, or existing within a company or organization                                                                                                                                                                                                                                                                                            |
| <i>instructor-led training</i>   | Facilitated by an instructor either online or in a classroom setting and allows learners and the instructor to interact and discuss the training material either individually or in a group.                                                                                                                                                           |
| <i>intake</i>                    | Process of taking in <i>data</i>                                                                                                                                                                                                                                                                                                                       |
| <i>integrate</i>                 | To bring together smaller <i>components</i> into a single system to function as one.                                                                                                                                                                                                                                                                   |
| <i>intelligence</i>              | The end product of information that has been subject to the intelligence process which involves the collection, evaluation, collation, analysis, reporting and dissemination of information.                                                                                                                                                           |
| <i>interoperability</i>          | Ability of a computer system to interact with other computer systems across local or wide-area <i>networks</i> regardless of their physical architecture and operating systems.                                                                                                                                                                        |
| <i>IP</i>                        | Internet Protocol                                                                                                                                                                                                                                                                                                                                      |
| <i>KPI</i>                       | Key performance <i>indicator</i>                                                                                                                                                                                                                                                                                                                       |
| <i>layered data</i>              | Composing <i>datasets</i> from different types of information                                                                                                                                                                                                                                                                                          |
| <i>lifecycle</i>                 | <i>Information management</i> encompasses the following: planning; the collection, creation, receipt, and capture of information; its organization, use, and dissemination; its maintenance, protection, and preservation; its disposition; and evaluation                                                                                             |
| <i>metadata</i>                  | The definition and description of the structure and meaning of information resources, and the context and systems in which they exist.                                                                                                                                                                                                                 |
| <i>model</i>                     | A set of ideas and numbers usually in a template that describe the past, present, or future state of something.                                                                                                                                                                                                                                        |
| <i>MS</i>                        | Microsoft                                                                                                                                                                                                                                                                                                                                              |
| <i>multi-dimensional sorting</i> | A process that measures and groups <i>data</i> into two or more dimensions e.g., analyzing the headcount of multiple organizations over multiple years.                                                                                                                                                                                                |
| <i>multi-tenancy</i>             | An architecture in which a single instance of a software application serves multiple customers. Each customer is called a tenant. Tenants may be given the ability to <i>customize</i> some parts of the application, such as the color of the <i>User</i> interface (UI), or business rules, but they cannot <i>customize</i> the application's code. |
| <i>network</i>                   | A system of computers and other devices that are connected to each other.                                                                                                                                                                                                                                                                              |
| <i>open architecture</i>         | A type of computer software architecture designed to facilitate the ease of adding, upgrading, and removing <i>components</i> . Third-parties develop and share products that plug into or interoperate with an <i>open architecture</i> .                                                                                                             |



| ITEM                               | DEFINITION                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>paired comparison matrices</i>  | Paired comparison (also known as pairwise comparison) helps you work out the importance of a number of options relative to one another. The analysis process makes it easy to choose the most important problem to solve, or to pick the <i>Solution</i> that will be most effective. It also helps you set priorities where there are conflicting demands on resources. |
| <i>PDF</i>                         | Portable Document Format                                                                                                                                                                                                                                                                                                                                                 |
| <i>Petabyte</i>                    | 1,024 Terabytes                                                                                                                                                                                                                                                                                                                                                          |
| <i>predictive detection models</i> | A statistical technique that works by analyzing historical and current <i>data</i> and generating <i>models</i> to help predict future outcomes. Data is collected, a statistical <i>model</i> is formulated, predictions are made and the <i>model</i> is validated or revised as additional <i>data</i> becomes available.                                             |
| <i>production report</i>           | A pixel-perfect report containing a high degree of standardized and consistent formatting suitable for reporting to the highest levels of the Department and to Central Government Agencies.                                                                                                                                                                             |
| <i>RBAC</i>                        | See role-based (access)                                                                                                                                                                                                                                                                                                                                                  |
| <i>RCMP</i>                        | Royal Canadian Mounted Police                                                                                                                                                                                                                                                                                                                                            |
| <i>record</i>                      | Information created, received, and maintained by an organization or person for business purposes, legal obligations, or both, regardless of medium or form.                                                                                                                                                                                                              |
| <i>record and field security</i>   | The ability to restrict access to information, by <i>record</i> and/or by <i>field</i> and ensures that certain <i>records</i> and <i>fields</i> in a <i>database</i> table can be viewed only by authorized <i>Users</i> .                                                                                                                                              |
| <i>redact</i>                      | To remove words or information from a text before it is printed or made available to the public                                                                                                                                                                                                                                                                          |
| <i>report template</i>             | See template.                                                                                                                                                                                                                                                                                                                                                            |
| <i>REST</i>                        | Representational State Transfer is a client-server architectural style of the World Wide Web for web services.                                                                                                                                                                                                                                                           |
| <i>RFP</i>                         | Request for Proposal                                                                                                                                                                                                                                                                                                                                                     |
| <i>RMS</i>                         | <i>Records</i> Management System                                                                                                                                                                                                                                                                                                                                         |
| <i>revocable</i>                   | Capable of being retracted and revoked.                                                                                                                                                                                                                                                                                                                                  |
| <i>role-based (RBAC)access</i>     | A method of regulating access to computer or <i>network</i> resources based on the roles of individual <i>Users</i> within an <i>enterprise</i> . Access is the ability of an individual <i>User</i> to perform a specific task.                                                                                                                                         |
| <i>SAML</i>                        | Security Assertion Markup Language is an <i>XML</i> -based, open-standard <i>data</i> format for exchanging authentication and authorization <i>data</i> between parties                                                                                                                                                                                                 |
| <i>search-based BI</i>             | Search-based <i>data</i> discovery tools enable <i>Users</i> to develop and refine views and analyses of structured and unstructured <i>data</i> using search terms.                                                                                                                                                                                                     |
| <i>semi-structured</i>             | A form of <i>structured data</i> that does not conform with the formal structure of <i>data models</i> associated with relational <i>databases</i> or other forms of <i>data</i> tables, but nonetheless contains tags or other markers to separate semantic elements and enforce hierarchies of <i>records</i> and <i>fields</i> within the <i>data</i> .               |
| <i>sequester</i>                   | To set apart and restrict information from general access. When the period of access to a <i>record</i> has expired, all references to the offence/charge must be vetted and restricted from access.                                                                                                                                                                     |
| <i>SIM</i>                         | Subscriber Identity Module removable card.                                                                                                                                                                                                                                                                                                                               |

| ITEM                              | DEFINITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>slice and dice</i>             | A systematic reduction of a body of <i>data</i> into smaller parts and views to yield greater information insight and understanding from the <i>User's</i> unique perspective.                                                                                                                                                                                                                                                                                                                                                     |
| <i>social media</i>               | The collective of online communication channels dedicated to community-based input, interaction, and content-sharing.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>social networks</i>            | Relationships and flows between people, groups, and organizations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <i>Solution (the)</i>             | Strategic Policing Information-Driven <i>Enterprise</i> Resource (SPIDER) Analytics. A software system, where all <i>component</i> parts are unified under one single <i>GUI</i> , as an <i>integrated</i> unit, synchronizing the <i>data</i> , where all information is shared with all <i>components</i> , and all authorized <i>Users</i> , with no noticeable delay to the <i>User</i> .                                                                                                                                      |
| <i>spatial data analysis</i>      | Spatial analysis is the process of extracting or creating new information about a set of geographic features to perform routine examination, assessment, evaluation, analysis or <i>modeling</i> of <i>data</i> in a geographic area based on pre-established and computerized criteria and standards. Spatial analysis is a process of <i>modeling</i> , examining, and interpreting <i>model</i> results useful for evaluating suitability and capability, for estimating and predicting, and for interpreting and understanding |
| <i>SPIDER Analytics</i>           | Strategic Policing Information-Driven <i>Enterprise</i> Resource (SPIDER) Analytics See <i>Solution (the)</i> .                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>structured data</i>            | Data that resides in a fixed <i>field</i> within a <i>record</i> or file is called <i>structured data</i> . This includes <i>data</i> contained in relational <i>databases</i> and spreadsheets                                                                                                                                                                                                                                                                                                                                    |
| <i>SWAT</i>                       | Swift Action Tactical services                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>template</i>                   | Refers to a <i>model</i> used for standardizing an output.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>temporal</i>                   | Of or relating to time, to the sequence of time, or to a particular time                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>time series forecasting</i>    | Forecasting future events based on known past events.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>topological (properties)</i>   | There are various properties of a figure, in general, and of a surface such as a sphere, torus, or disk, in particular, that may be used to distinguish between such figures topologically.                                                                                                                                                                                                                                                                                                                                        |
| <i>transparent</i>                | Software operating in such a way that a <i>User</i> does not perceive how the software is working and is invisible to the <i>User</i> .                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>TSL</i>                        | Transport Sockets Layer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>UCR</i>                        | Uniform Crime Reporting codes used to identify crime types and entered as part of the occurrence in the occurrence and reporting system PROS or PRIME                                                                                                                                                                                                                                                                                                                                                                              |
| <i>unsequester</i>                | Reversing the <i>sequestering</i> or setting apart from general access.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>unstructured data</i>          | <i>Unstructured data</i> is a generic label for describing <i>data</i> that is not contained in a <i>database</i> or some other type of <i>data</i> structure. <i>Unstructured data</i> can be textual or non-textual.                                                                                                                                                                                                                                                                                                             |
| <i>User</i>                       | A person who uses the <i>Solution</i> and its <i>component</i> parts.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>weighted ranking matrix</i>    | A table used in evaluating possible alternatives to a course of action to assess and arrange all of the options, especially when there isn't a clear preferred option. It takes the subjectivity out of the decision that needs to be made by weighing all of the factors and criteria that are used to make a final conclusion.                                                                                                                                                                                                   |
| <i>XML</i>                        | Extensible Markup Language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Youth Criminal Justice Act</i> | S.C. 2002, c. 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |



## **Annex B**

### **Proof of Proposal (POP) Test**

#### **STRATEGIC POLICING INTELLIGENCE-DRIVEN ENTERPRISE RESOURCE (SPIDER) ANALYTICS SOLUTION**

This document is designated as Protected B

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## 1 INTRODUCTION

The Proof of Proposal identifies tests for key areas of the requirements to validate the results of the evaluation of the *Solution*. The Vendor must provide a test data set that demonstrates the *Solution* meets each of the Proof of Proposal testing scenarios. At its discretion, the RCMP may also provide a test data set to be used in the Proof of Proposal testing.

## 2 PROOF OF PROPOSAL TEST SCENARIOS

The *Solution* must deliver, enable, support and allow the usage, management, and interaction with the technology from the perspective of the following functional business areas and technical environment, using all the requirements as expressed in the Statement of Requirements.

### 2.1 Intake and Usage

The *Solution* must *intake* information, standardize formats, as required, and update information across all *components* at the same time. The system must support outputs, inputs, data types, file formats, and navigation.

| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements M-1 to M-12 (Annex A — Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Testing Approach                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <i>Note: For the Proof of Proposal Test, external connectivity, although a requirement, need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Test Scenario 1: Data Intake</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> <i>intakes</i> large amounts of structured and <i>unstructured data</i> with different file types, and formats the data received from the data source; and,</li> <li>2. Must demonstrate how the <i>Solution</i> supports data <i>intake</i> from an <i>RCMP</i> internal <i>network</i> connection.</li> </ol>                                                                            |
| <b>Test Scenario 2: Usage</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> enables <i>Users</i> to export data from defined data sets;</li> <li>2. Must demonstrate how the <i>Solution</i> enables <i>Users</i> to create and update relationships between data elements; and</li> <li>3. Must demonstrate how the <i>Solution</i> enables <i>Users</i> to access (create, edit, update) any data in the <i>Solution</i> and all other authorized data sources.</li> </ol> |

### 2.2 Collaboration

Information in the *Solution* must flow across all *components*, updating at the same time, to provide information sharing capability to all *Users*, depending upon access permissions granted.

| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements M-13 to M-17 (Annex A — Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Testing Approach                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>Note: For the Proof of Proposal Test, external connectivity although a requirement, need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Test Scenario: <i>Collaboration</i></b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> supports sharing the same information amongst <i>Users</i> within or outside of a team and share saved queries;</li> <li>2. Must demonstrate how the <i>Solution</i> allows an Authorized <i>User</i> to access (create, edit, update) <i>multi-tenancy domains</i>; and</li> <li>3. Must demonstrate how the <i>Solution</i> supports the functionality to update information across the <i>Solution</i> at the same time and be available to <i>Users</i> according to permissions.</li> </ol> |

## 2.3 Search and Query

Search and Query focus on how information is to be found, re-found, and how to let *Users* know about information of interest. The *Solution* searches, queries and accesses information either in whole or in part.

| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements M-18 to M-27 (Annex A — Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Testing Approach                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Test Scenario 1: Search</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> has the ability to simultaneously and seamlessly search across all data holdings and be able to save current search criteria;</li> <li>2. Must demonstrate how the <i>Solution</i> supports creating search criteria and allows viewing the search query history on recent searches; and</li> <li>3. Must demonstrate how the <i>Solution</i> supports search results that include synonyms and ranked lists.</li> </ol> |
| <b>Test Scenario 2: Query</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> supports different types of queries; and,</li> <li>2. Must demonstrate how the <i>Solution</i> allows updating queries ensuring the query accesses the latest data <i>entities</i> from sources.</li> </ol>                                                                                                                                                                                                               |

## 2.4 Data Mining

The *Solution* identifies and discovers *entities*, patterns, and relationships. Parameters include association, sequence classification, clustering, or forecasting.

|                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                             |
| Requirements M-28 to M-29 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                            |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                    |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                               |
| <b>Test Scenario: Data Mining</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> extracts data from structured and <i>unstructured data</i> sources using rules and/or <i>models</i>; and</li> <li>2. Must demonstrate how the <i>Solution</i> supports the discovery of information, relationships, trends and patterns from data sources.</li> </ol> |

## 2.5 Alerts

The *Solution* identifies the types of situations when *Users* are able to create or apply *alerts* and the capabilities the *alert* will have.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Requirements M-30 to M-32 (Annex A — Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>Note: For the Proof of Proposal Test, external connectively need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Test Scenario: Alerts</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> supports <i>Users</i> in creating, publishing, modifying and using <i>alerts</i> on data from any source;</li> <li>2. Must demonstrate how the <i>Solution</i> supports <i>Users</i> in creating and updating <i>alerts</i> on the <i>Solution</i> and ensures that the <i>Solution</i> identifies when a threshold is met or exceeded and</li> <li>3. Must demonstrate how the <i>Solution</i> supports notifying <i>Users</i> by email or other <i>alerting</i> method.</li> </ol> |

## 2.6 Analysis

The *Solution* analyzes the data in a methodical way to discover and identify relationships, *networks*, and how all of the parts relate.

|                |
|----------------|
| <b>Element</b> |
|----------------|



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements M-33 to M-41 (Annex A — Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Test Scenario: Analysis</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to filter and do analysis on different data <i>entities</i>: <ol style="list-style-type: none"> <li>a. Analyze information using <i>data mining</i>;</li> <li>b. Analyze information using predictive analytics; and,</li> <li>c. Plan and <i>model</i> scenarios.</li> </ol> </li> <li>2. Must demonstrate how the <i>Solution</i> builds and rebuilds relationships on <i>networks</i>, with no required input from <i>Users</i>;</li> <li>3. Must demonstrate how the <i>Solution</i> can do <i>temporal</i> analysis regardless of the date format;</li> <li>4. Must demonstrate how the <i>Solution</i> provides different analysis methods such as <i>slice and dice</i> and time series analysis; and</li> <li>5. Must demonstrate how <i>Users</i> access (create, edit, update) linkage results created or provided within the <i>Solution</i>, for further action.</li> </ol> |

## 2.7 Predictive Analysis

The *Solution* uses Predictive Analysis through all *components* in a methodical way to discover and identify likely new relationships and emerging *networks* and possible future outcomes.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Requirements M-42 to M-47 (Annex A — Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Test Scenario: Predictive Analysis</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to create predictive <i>models</i> with statistical functions and sampling algorithms and modify predictors in <i>models</i>;</li> <li>2. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to create matrices to rank, score, and prioritize items;</li> <li>3. Must demonstrate how the <i>Solution</i> supports predictive threat detection <i>models</i> based on rules and/or an algorithmic approach; and</li> <li>4. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to perform time series based forecasting.</li> </ol> |

## 2.8 Audit

The *Solution* must track and *record* to a log file, the activities of a *User* or *Users* and the interactions of a *User* with the *Solution*.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Requirements M-48 to M-50 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Test Scenario: Audit</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> tracks and audits usage for all <i>Users</i>, groups, and roles across all <i>components</i>, from a single access point;</li> <li>2. Must demonstrate how the <i>Solution</i> allows the <i>Administrators</i> and <i>Auditors</i> to view audit log data across all applications from a single access point; and</li> <li>3. Must demonstrate how the <i>Solution</i> provides the audit trail of a <i>model</i> from origin to current status.</li> </ol> |

## 2.9 Business Intelligence

The *Solution* must create and explore *dashboards*, and *data visualizations*, to improve decision-making and facilitate information sharing and analysis.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Requirements M-51 to M-60 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Test Scenario: Business Intelligence</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> automatically analyzes data from data sources and/or established <i>networks</i>;</li> <li>2. Must demonstrate how the <i>Solution</i> supports the detection, automatic flagging and reporting on similar <i>records</i> from any data source;</li> <li>3. Must demonstrate how the <i>Solution</i> supports <i>data visualization</i> using different data types; and displays location information; and</li> <li>4. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to manually add links to visualizations, with additional data from internal sources.</li> </ol> |

## 2.10 Reporting

The *Solution* allows *Users* to create and use reports and/or *report templates* or *ad-hoc report* creation, to produce outputs to allow exploring and sharing information.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Requirements M-61 to M-74 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Test Scenario: Reporting</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to access (create, edit, update) different types of reports and <i>report templates</i> with or without watermarks;</li> <li>2. Must demonstrate how the <i>Solution</i> supports the <i>bursting</i> of reports;</li> <li>3. Must demonstrate how the <i>Solution</i> allows the distribution of reports by email;</li> <li>4. Must demonstrate how the <i>Solution</i> allows <i>Users</i> to filter, sort, rank and suppress the report results; and</li> <li>5. Must demonstrate how the <i>Solution</i> supports and allows <i>Users</i> to expand or collapse content on report results.</li> </ol> |

## 2.11 Information Management

The *Solution* uses *Information Management* to direct and support the effective and efficient management of information in the organization from planning and systems development to disposal or long-term preservation.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Requirements M-75 to M-82 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Test Scenario: Analysis</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> supports the functionality that tags data with purge <i>metadata</i> during transactions between data sources;</li> <li>2. Must demonstrate how the <i>Solution</i> supports scheduling of retention periods;</li> <li>3. Must demonstrate how the <i>Solution</i> allows the <i>Administrator</i> to manage <i>metadata</i> and <i>metadata</i> repositories and allow <i>User</i> access (create, edit, update); and</li> <li>4. Must demonstrate how the <i>Solution</i> supports <i>metadata</i> management to enable and allow software and/or <i>Users</i> to <i>sequester</i> and <i>unsequester</i> information subject to business rules.</li> </ol> |

## 2.12 Technical Environment Requirements

The technical environment requirements identify key elements on how the *Solution* integrates with the

*RCMP* environment, the performance of the *Solution*, and its *configuration*.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Elements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Business Outcomes</b><br>Requirements M-83 to M-128 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Testing Approach</b><br><br><i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i><br>The base system of the <i>Solution</i> must run in the <i>RCMP</i> technical environment.<br>Refer to the Statement of Requirements - Section 4.2 Technical Environment Summary for the summary list.                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Test Scenario 1: Functional Integration</b><br><b>The <i>Solution</i> must provide data flow seamlessly and transparently to <i>Users</i> amongst <i>components</i> in a single Graphical <i>User</i> Interface.</b> <ol style="list-style-type: none"> <li>1. Must demonstrate how the <i>Solution</i> supports integration of all functionalities and <i>components</i> in a single Graphical <i>User</i> Interface; and</li> <li>2. Must demonstrate how the <i>Solution</i> supports seamless and transparent data flow to <i>Users</i>, throughout the creation and/or updating of information in the <i>Solution</i>.</li> </ol>                                                                               |
| <b>Test Scenario 2: Performance</b><br><b>The <i>Solution</i> must demonstrate a response time as set out in the Statement of Requirements.</b> <ol style="list-style-type: none"> <li>1. Must demonstrate that the <i>Solution</i> responds within 10 seconds to requests and provides the user loading information if the response time is over 10 seconds.</li> </ol>                                                                                                                                                                                                                                                                                                                                                |
| <b>Test Scenario 3: Language</b> <ol style="list-style-type: none"> <li>1. Must demonstrate that the <i>Solution</i> supports all content using the full character set of both official languages (English and Canadian French) of Canada;</li> <li>2. Must demonstrate that the <i>Solution</i> allows <i>Users</i> to switch between English and Canadian French at any time; and</li> <li>3. Must demonstrate that the <i>Solution</i> supports full UTF-8 standard compliance.</li> </ol>                                                                                                                                                                                                                           |
| <b>Test Scenario 4: Security</b> <ol style="list-style-type: none"> <li>1. Must demonstrate that the <i>Solution</i> interoperates with the Lightweight Directory Access Protocol (LDAP) for <i>User</i> login;</li> <li>2. Must demonstrate that the <i>Solution</i> allows <i>Administrator</i> to administer <i>User</i>/group rights, privileges, restrictions and <i>metadata</i> properties;</li> <li>3. Must demonstrate that the <i>Solution</i> allows only authorized access (create, edit update) to the <i>Solution</i> and to the data; and</li> <li>4. Must demonstrate that the <i>Solution</i> secures web-browsing at the application-layer by Transport Sockets Layer (TLS 1.2 and above).</li> </ol> |

## 2.13 Case Management

The *Solution* supports how *Users/Groups* create, search and use any type of case based on business rules, and tracks a case as it transitions and progresses through stages of the case *lifecycle*.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Element</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Requirements R-18 to R-33 (Annex A – Statement of Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Testing Approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <i>Note: For the Proof of Proposal Test, external connectivity need not be demonstrated.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Test Scenario: Case Management</b> <ol style="list-style-type: none"> <li>1. Must demonstrate, if applicable, how the <i>Solution</i> supports <i>Users</i> creating, searching, modifying and saving a case or different types of cases manually and automatically;</li> <li>2. Must demonstrate, if applicable, how the <i>Solution</i> allows group members to interact with a case and track a case as it transitions and progresses through the entire case <i>lifecycle</i>; and</li> <li>3. Must demonstrate, if applicable, how the <i>Solution</i> allows an <i>Authorized User</i> to delete, or archive a case, to reopen or modify a closed case and to close a case at any time during the workflow prior to completion.</li> </ol> |

# Data and Analytics Strategy and Roadmap Proposal and Statement of Work



Prepared for: RCMP  
24 July 2017

Project Number: 330044776  
Version #1  
GARTNER CONSULTING

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# Agenda

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1. Background
2. Analytics Project Strategy, Approach & Deliverables
3. Terms and Conditions

2  
3  
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# Context, Scope and Objectives

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## Context

- RCMP realizes the importance of analytics to support informed decision making within the organization and has already made investments in this area.
- The analytics market has evolved rapidly in the last two years with the promise of artificial intelligence and machine learning providing a dramatic improvement in the accuracy and speed of decisions.
- The RCMP must evolve beyond providing data for human interpretation to a position where information and algorithms are trusted and adopted for recommendation and action in operational settings.
- The RCMP seeks a partner to create a Data Strategy and a Roadmap for implementing that Strategy over a three-year period including a prioritized and sequenced set of initiatives and supporting estimates.

## Scope and Objectives

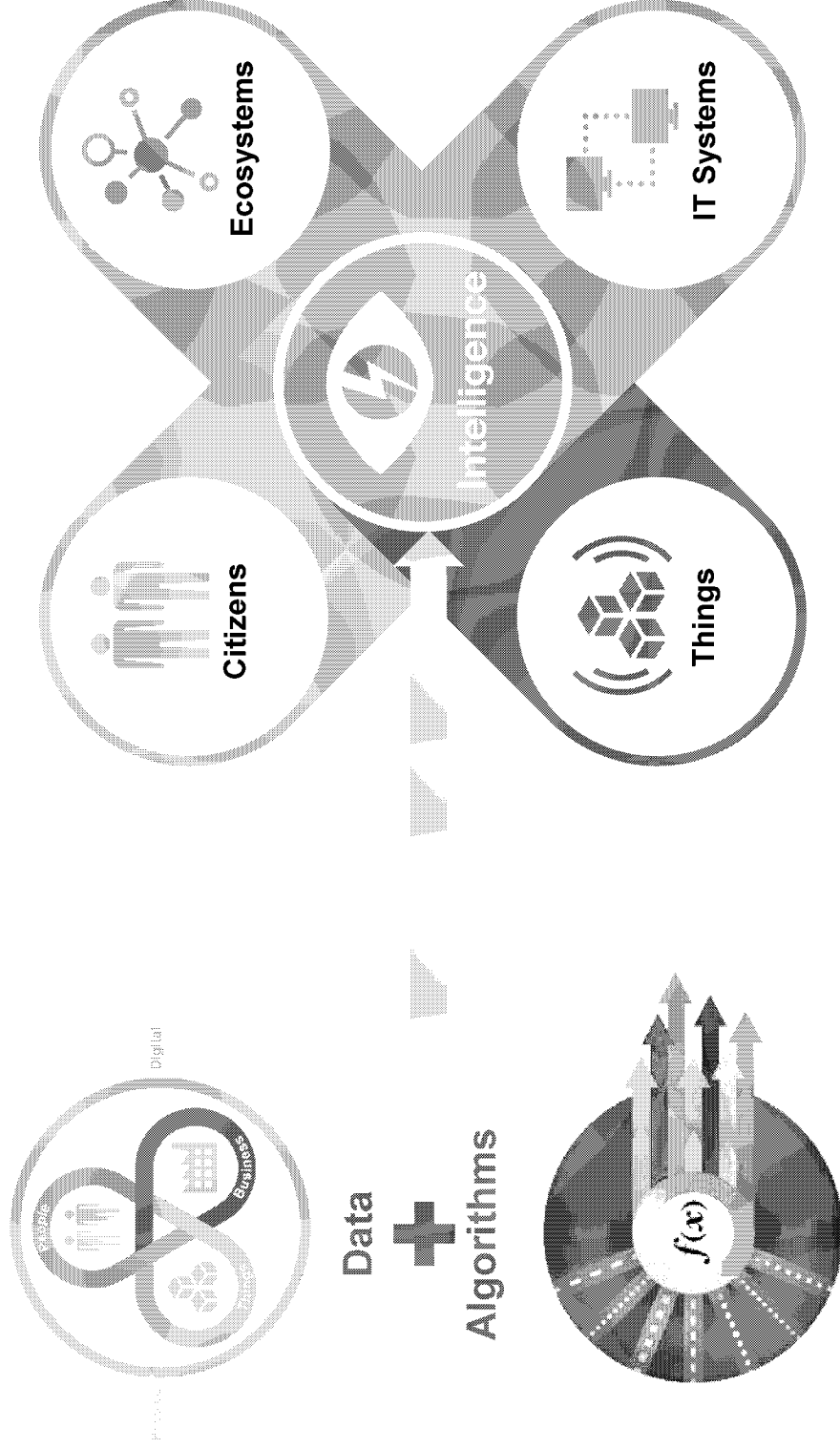
- The key objectives of the engagements include:
  - Creation of a Data Strategy in a practical manner
  - Development of a 3-year roadmap to implement that strategy.
- This effort addresses the three workstreams which RCMP require:
  - Analysis and Recommendations (Strategy) including tools and organization
  - Business Value of enabling business capabilities including benefits and cost avoidance
  - Roadmap and Implementation Plan for a 3-year period
- The Scope is limited to RCMP but will identify practices and tools that support RCMP obligations to central agencies and information sharing with recognized partners, GC departments and international agencies.



## **2. Project Strategy, Approach & Deliverables**

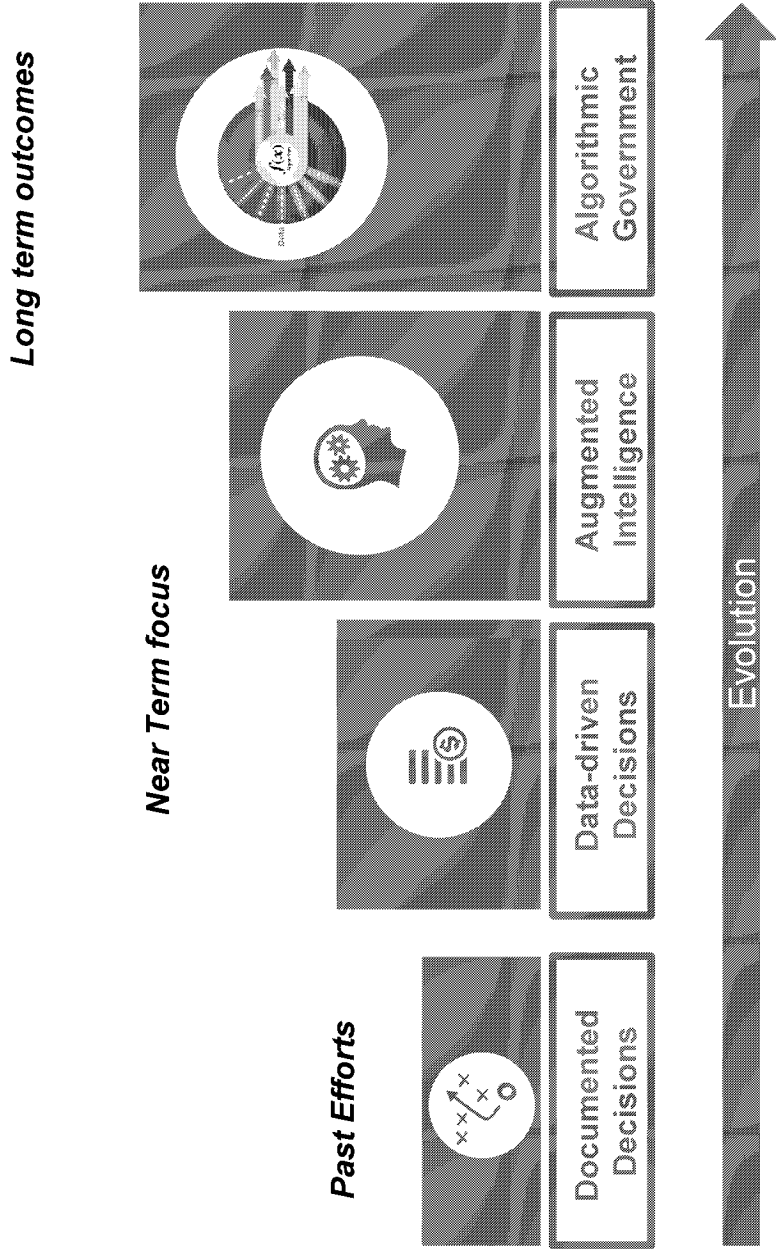
- **Approach**
- **Case Studies**
- **Project Schedule**
- **Deliverables**

At the center of the Digital Platform is Intelligence comprising of Data and Algorithms that enables informed decision-making

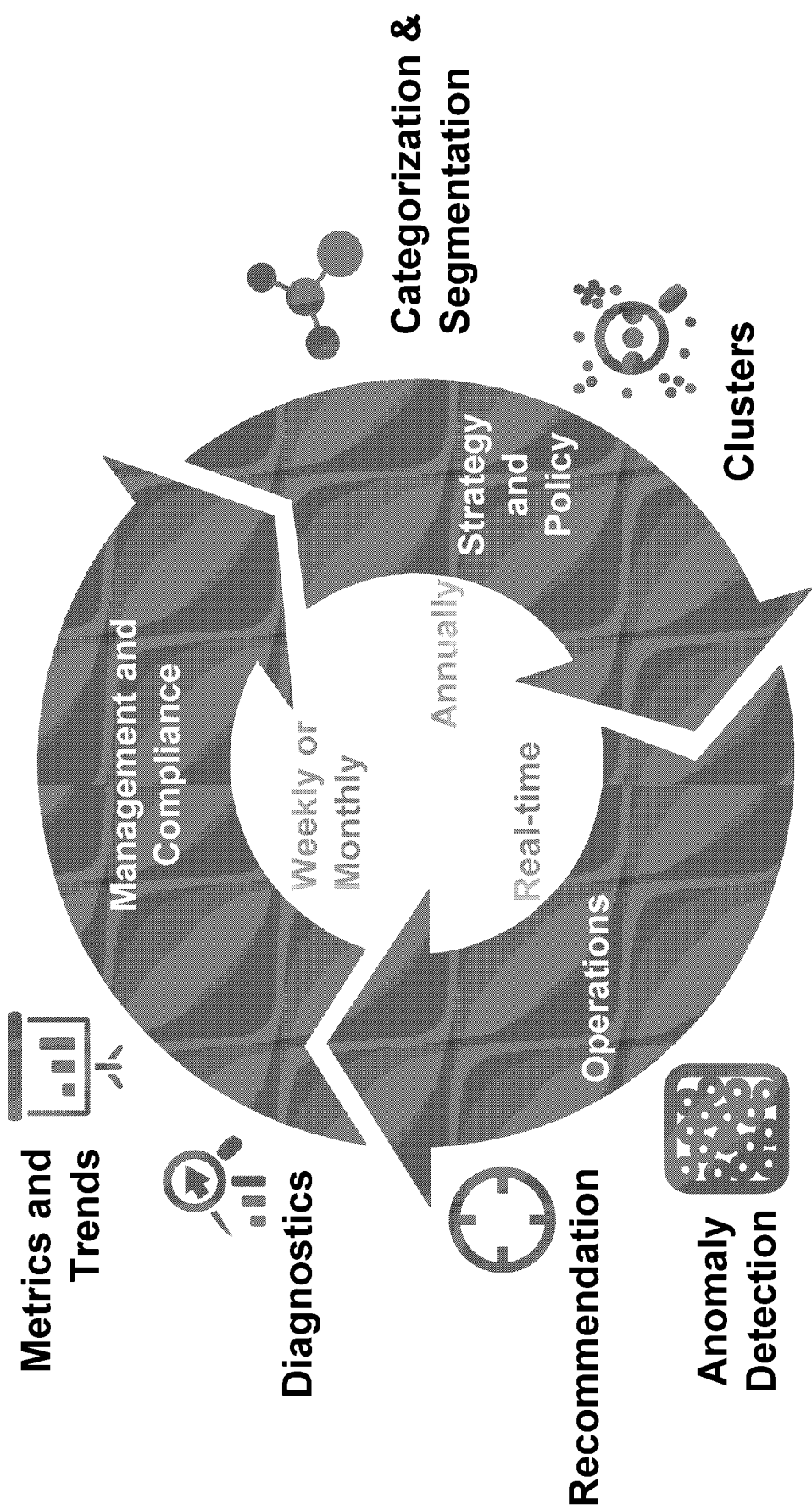


Greater scale, efficiency and fidelity can be achieved with the introduction of decision models and algorithms acting on high quality, rich information

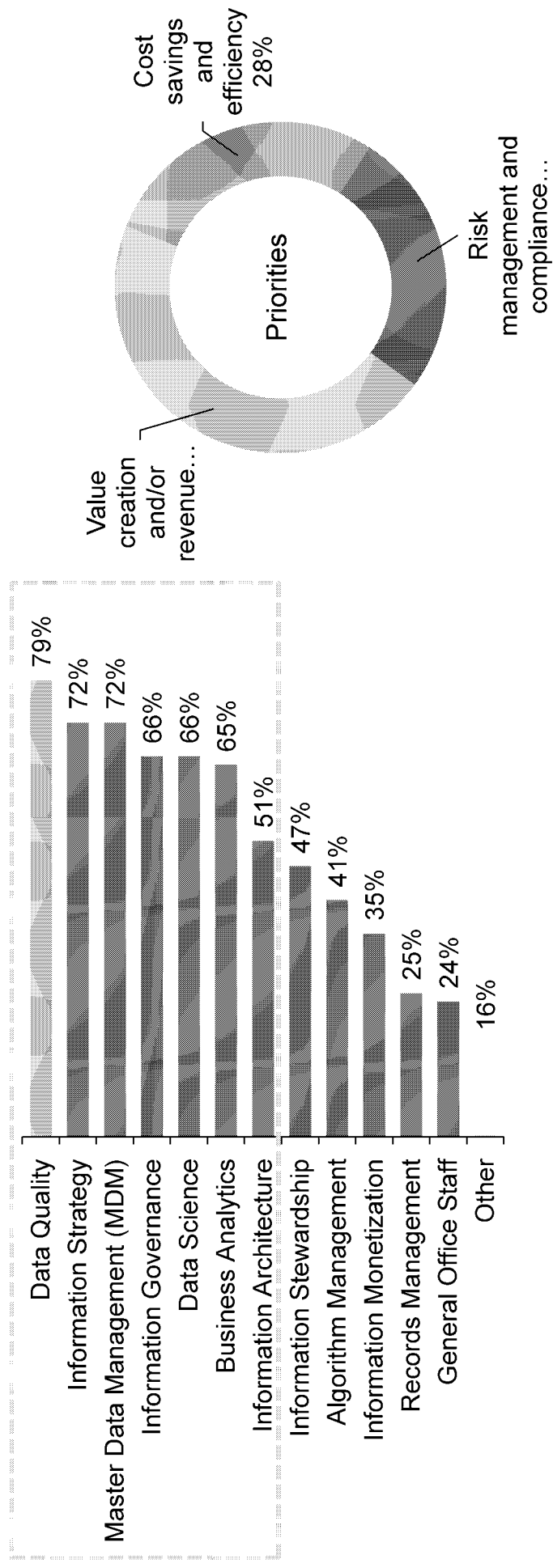
*Instinct-driven decisions will increasingly give way to evidence-based decisions and ultimately full autonomy. Navigating this new digital territory presents unexpected risks and rewards*



There are three areas in which we need to explore and exploit information to make decisions and determine appropriate action

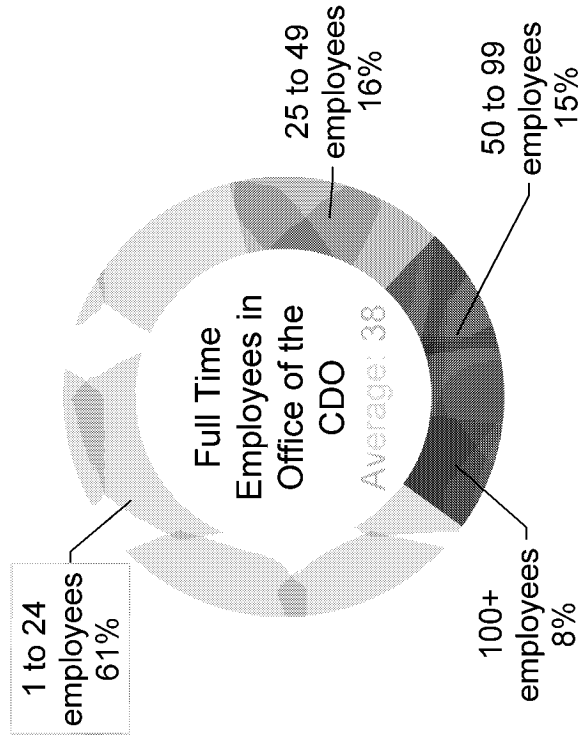


# Ongoing Gartner Research shows that “Chief Data Officers – CDOs” focus on increasing value from data through strategy, governance and analytics innovation



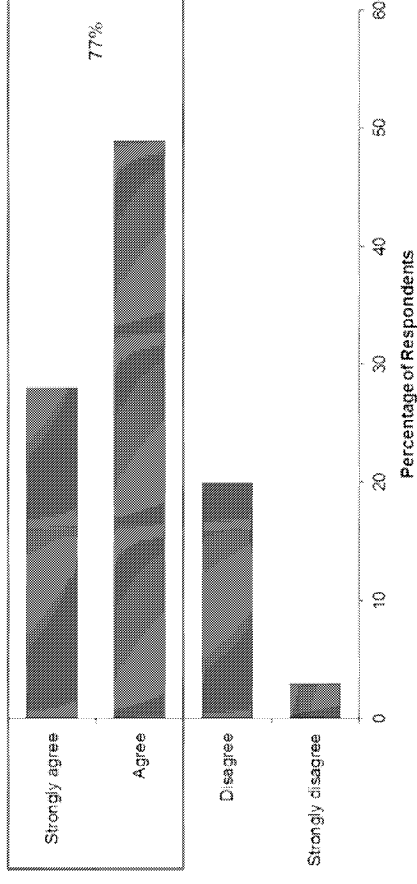
n=98; Base : Respondents who have fully or partially implemented Office of the CDO in their organizations (O1)

## New skills are required and are already in demand, leading to scarcity of supply



n=98; Base : Respondents who have fully or partially implemented Office of the CDO in their organizations (O1)

In 10 years, the skills and knowledge in your organization will have little resemblance to the skills and knowledge you have today



### Leading roles include

- Chief Data Officer (CDO)
- Data Governance manager / facilitator
- Data Quality manager
- Lead information steward
- Master data management (MDM) program manager
- Data Scientist
- Digital Ethicist



















# Detailed Approach

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## Step 1: Project Kickoff and Management

### Objective:

- Formally initiate the engagement with RCMP and establish the proper and ongoing control over its execution.

### Activities performed by Gartner:

- Gartner will conduct a formal kickoff and work closely with RCMP to fine-tune and validate the proposed approach and articulate a detailed project schedule.
- In addition, Gartner will conduct ongoing project management activities throughout the duration of the engagement. This will include action and status reports and delivery risk identification and mitigation.

### RCMP responsibilities:

- Ensure attendance at kickoff meeting by Project Sponsor, Project Manager and other key stakeholders, as determined prior to kickoff.

### Deliverables:

- Kickoff Materials
- Project Plan
- Status Report Template

### Time frame:

- 1 day for project kickoff
- Project management occurs for the duration of the project

# Detailed Approach

## Step 2: Enterprise Benchmark and Analysis

### Objective:

- Establish the underlying business context for the RCMP business, establish a common understanding of its baseline, and assess them against best business practices.

### Activities performed by Gartner:

- Gartner will review documentation provided by RCMP and conduct a series of interviews and/or workshops with relevant stakeholders to obtain an understanding of its business goals and strategy, operations, drivers, and constraints as they relate to analytics.

- In addition, Gartner will examine the RCMP environment with respect to its ability to develop and deploy Analytics. These findings will be normalized, categorized and benchmarked. For each finding, its impact to vision, strategy, metrics, information governance, organization and roles, information life cycle, and enabling infrastructure components will be assessed relative to best practice

- Gartner will benchmark the overall RCMP environment and the cumulative output will be compared against best business practices using Gartner's maturity model. Based on these comparisons, Gartner will provide specific recommendations and set the focus and direction for all subsequent tasks.

### RCMP responsibilities:

- Provide requested documentation.
- Support the scheduling of the interviews and workshops.
- Fully participate in interviews and workshops.

### Deliverables:

- Findings and Maturity Benchmark Assessment – a tabular and textual description of all factors affecting the dimensions of the data and analytics environment, as well as a comparison of current practices and components against best practices. Used to establish a common and consistent view of data and analytics and to guide subsequent detailed analyses.

### Time frame:

- 5 weeks



## Detailed Approach

### Step 3: Vision and Strategy Benchmark

#### Objective:

- Based on the business context, formulate the associated RCMP goals along with their prioritization and sequencing.

#### Activities performed by Gartner:

- Gartner will identify the optimal Data and Analytics business outcomes and define the Data and Analytics scope balancing overarching external guidance, RCMP's long-term strategic goals, and the tactical and immediate needs of RCMP's organizational elements.
- Gartner will then determine the Data and Analytics goals that contribute to these outcomes. These goals, their interrelations, and their linkages to the RCMP business outcomes will be depicted in the Data and Analytics Vision and Strategy.
- Gartner will then analyze RCMP's Data and Analytics goals and scope and will prioritize them based on organizational needs, technical constraints and benchmark peers. The derived prioritizations and deployment sequencings will be depicted in the Data and Analytics Strategic Plan.

#### RCMP responsibilities:

- Support the scheduling of the workshops.
- Fully participate in workshops.
- Review and comment on draft and final document.

#### Deliverables:

- Vision and Strategy – a graphical and textual description capturing business strategy, business drivers, information technology drivers and trends, and business requirements and establishing the data-centric goals that accommodate their combined effects. Used to formulate comprehensive data-specific goals and articulate their contribution to business goals.
- Strategic Plan – a graphical and textual description capturing business outcome importance and strategic goal implementation ease, along with the priorities and sequencing of each. Used to formulate the strategic, phased execution and deployment plan.

#### Time frame:

- 4 weeks

# Detailed Approach

## Step 4: Target State Design

### Objective:

- Establish a comprehensive view of the target state components required for achieving RCMP's Data and Analytics goals and gaps.

### Activities performed by Gartner:

- Gartner will decompose the Data and Analytics strategic goals and determine the required operating model and technical architecture required to achieve them. The operating model will comprise all information governance, organization and roles, and information life cycle components and capacities required to achieve those goals.
- The operating model portion of the Target State includes defining organizational capacity and key roles. The technical architecture will comprise all enabling technology components and capabilities with reference to the required data sources.
- Gartner will then use a combination of stakeholder interviews and review existing and planned activities and efforts to determine their potential contribution to applicability towards the devised components. The components, their interactions, and the associated gaps will be described in the Data and Analytics Target State.

### RCMP responsibilities:

- Support the scheduling of the interviews.
- Review and comment on draft and final document.
- Ensure the completion of the survey.
- Provide organizational and technical clarifications.

### Deliverables:

- Target State – a graphical and textual description of the required information governance, organization and roles, information life cycle, enabling infrastructure, and metrics components and capabilities that have to be in place, in order to achieve the Data and Analytics goals, along with their respective gaps in relation to existing capabilities. Used to establish a target state for the roadmap.

### Time frame:

- 4 weeks

# Detailed Approach

## Step 5: Roadmap and Implementation Plan

### Objective:

- Develop a roadmap laying out the major sequence of activities and events for RCMP to implement the desired target state.

### Activities performed by Gartner:

- Gartner will devise a set of time-phased actions to bridge the identified gaps as captured in the gap analysis. The actions will provide guidance on the evolution of Data and Analytics towards its formulated target state at RCMP. In doing so, Gartner will consider the comprehensive set of components, including organization needs, culture, systems, and ancillary goals, as well as best business practices and expert judgment.
- The sequence of the proposed activities will be contingent upon both logical dependencies among them, as well as prioritization factors based on RCMP resources and technical considerations. Gartner will take into account opportunities for early wins and for foundational activities of high value.

### RCMP responsibilities:

- Review and comment on draft and final document.
- Provide organizational and technical clarifications.

### Deliverables:

- Roadmap – a graphical and textual representation of the activities required to bridge the gaps, their logical dependencies, and their relative sequencing. Used to provide a time-phased set of discrete and actionable activities that will result in the target state.
- Implementation plan – a graphical and textual compilation of all relevant templates, practices, processes, frameworks, and patterns that will be required for the development and execution of the Data and Analytics program. Used to provide the reference base for the roadmap.

### Time frame:

- 3 weeks

## Approach Detail

### Summary of Deliverables

| Step                                                    | Deliverables                                                                                                                | Date          |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------|
| Step 1: Project Kickoff and Management                  | <ul style="list-style-type: none"> <li>Kickoff Deck</li> <li>Project Plan</li> <li>Weekly Status Report Template</li> </ul> | Aug 17, 2017  |
| Step 2: Enterprise Benchmark and Analysis               | <ul style="list-style-type: none"> <li>Initial Findings</li> <li>Maturity Assessment</li> </ul>                             | Sept 18, 2017 |
| Step 3: Vision and Strategy Benchmark                   | <ul style="list-style-type: none"> <li>Vision</li> <li>Strategy</li> <li>Strategic Plan</li> </ul>                          | Oct 2, 2017   |
| Step 4: Target State Design and Business Value Estimate | <ul style="list-style-type: none"> <li>Target State – Operating Model</li> <li>Target State – Technology Model</li> </ul>   | Oct 23, 2017  |
| Step 5: Roadmap and Implementation Plan                 | <ul style="list-style-type: none"> <li>Roadmap</li> <li>Implementation Plan</li> </ul>                                      | Nov 6, 2017   |

Based on all findings from RCMP, key findings will be identified across the seven building blocks

**Summary Sample**

The following represents summary themes / observations and their alignment with the building blocks

| Building Block         | Drivers                                                                                                                                                                                   | Requirements                                                                                                                                                                   | Findings                                                                                                                                                |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vision                 | <ul style="list-style-type: none"> <li>Strong organizational commitment</li> </ul>                                                                                                        | <ul style="list-style-type: none"> <li>The business needs IT to develop a Data and Analytics specific Vision to address key business needs</li> </ul>                          |                                                                                                                                                         |
| Strategy               | <ul style="list-style-type: none"> <li>Analytics work streams based on the transformation strategies are being executed</li> </ul>                                                        | <ul style="list-style-type: none"> <li>IT needs a cohesive plan that progresses data and analytics capabilities to support business needs</li> </ul>                           |                                                                                                                                                         |
| Metrics                | <ul style="list-style-type: none"> <li>Business process, performance and financial metrics have been clearly defined through the transformation program and are being deployed</li> </ul> | <ul style="list-style-type: none"> <li>IT needs to define Analytics and IT facing metrics that measure improvement against business needs (e.g. balanced scorecard)</li> </ul> |                                                                                                                                                         |
| Information Governance | <ul style="list-style-type: none"> <li>Established governance structure for Digital Innovation exists</li> </ul>                                                                          | <ul style="list-style-type: none"> <li>The business needs Data and Analytics governance</li> </ul>                                                                             | <ul style="list-style-type: none"> <li>Scorecards are not used as proactive management tools</li> </ul>                                                 |
| People                 | <ul style="list-style-type: none"> <li>Analytics roles align to business functions</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>Client needs to identify and create appropriate organizations and roles</li> </ul>                                                      | <ul style="list-style-type: none"> <li>Limited number of people with the appropriate skill set</li> </ul>                                               |
| Processes              | <ul style="list-style-type: none"> <li>General trust in data</li> </ul>                                                                                                                   | <ul style="list-style-type: none"> <li>Need to provide the data in near "real-time"</li> </ul>                                                                                 | <ul style="list-style-type: none"> <li>Data outside governed sources (e.g. the business DW) requires significant preparation before analysis</li> </ul> |
|                        | <ul style="list-style-type: none"> <li>There are instances of reliable data ready for analysis</li> </ul>                                                                                 | <ul style="list-style-type: none"> <li>The business needs adequate self-serve data preparation and analysis</li> </ul>                                                         | <ul style="list-style-type: none"> <li>Access to data is a challenge</li> </ul>                                                                         |

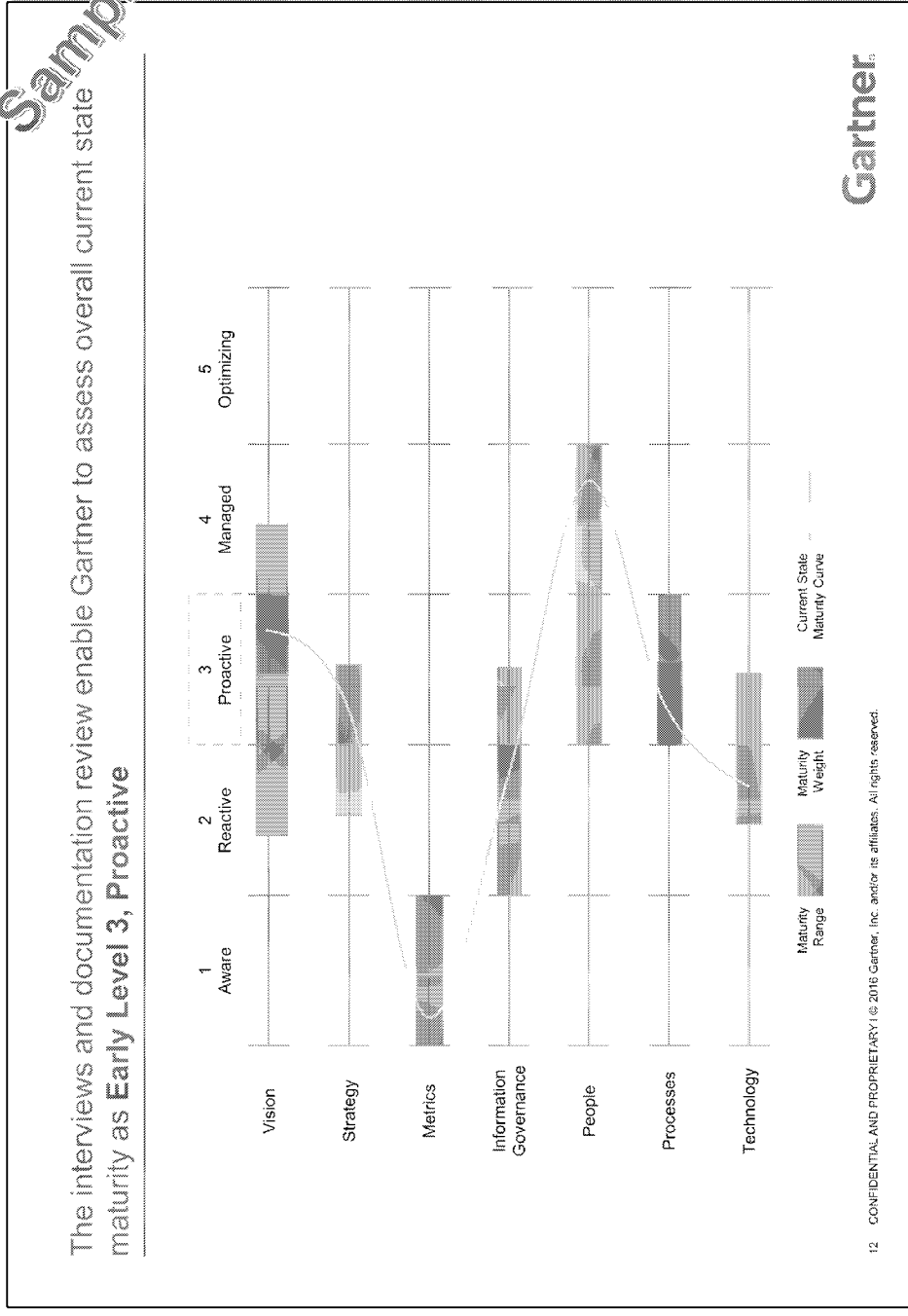
\*See slide 10 for descriptions of Drivers, Requirements and Pain Points  
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◆ Key Findings will be confirmed in Workshop 1

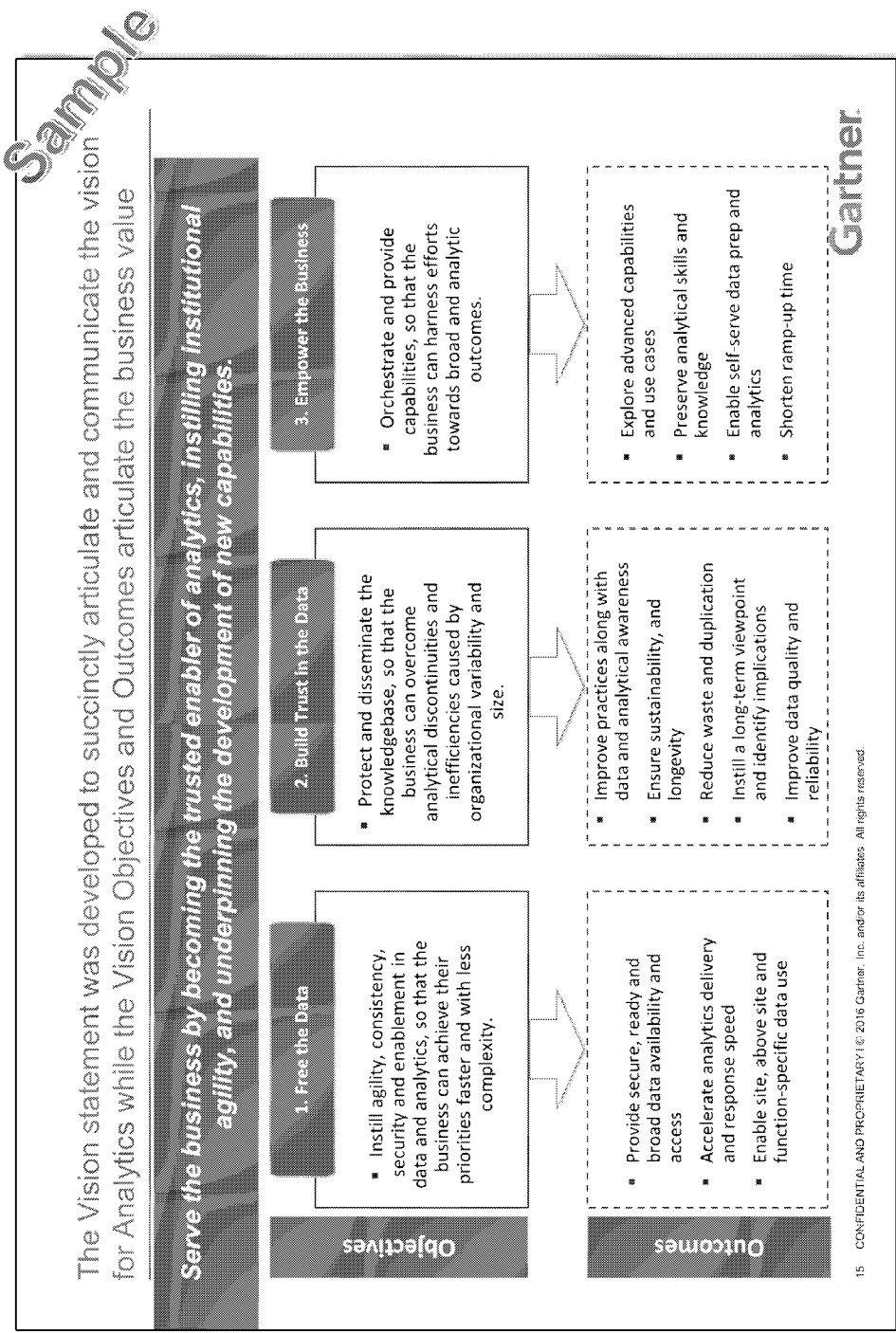
## Step 2: Enterprise Assessment and Analysis

The Maturity is benchmarked and displayed visually to allow comparison across the Seven Building Blocks and to evaluate the health of the program



◆ The Maturity Assessment will be confirmed in Workshop 1

The Vision describes what Data and Analytics looks like, why it is needed, and how it support the overall Business Vision



◆ The Vision Statement, Objective and Outcomes will be confirmed in Workshop 2



# The Strategic Goals and Sub-goals articulate how Data and Analytics will be realized at RCMP and benchmarked vs. peers

Sample

| Sub-Goals were created as a means to define the scope and capabilities of each Strategic Goal           |                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategic Goal                                                                                          | Strategic Sub-goals                                                                                                                                                                                                                                       |
| 1 Establish the foundation for reliable analytics by facilitating data identification and access        | <ul style="list-style-type: none"> <li>Improve data search and discovery</li> <li>Foster practitioner collaboration</li> <li>Improve data tagging</li> <li>Support common data platforms in sites, above sites and across Client</li> </ul>               |
| 2 Provide reusable services for data integration to expedite delivery and provide end-to-end visibility | <ul style="list-style-type: none"> <li>Deploy formal and repeatable processes</li> <li>Enable broad information linkages</li> <li>Monitor, coordinate and plan across sites and business functions</li> <li>Establish data integration metrics</li> </ul> |
| 3 Supply the robust processes and tools needed to aid in data understandability and consistency         | <ul style="list-style-type: none"> <li>Establish data quality metrics</li> <li>Enhance metadata</li> <li>Enforce data standards</li> <li>Provide visibility into data source and derived values</li> </ul>                                                |
| 4 Provide analytical agility through nimble data adaptability and use techniques                        | <ul style="list-style-type: none"> <li>Support data from all site systems</li> <li>Support multiple tools</li> <li>Offer self-serve data preparation</li> <li>Support 3rd Party data integration</li> </ul>                                               |
| 5 As part of a unified data and analytics platform, enable self-service data usage and analysis         | <ul style="list-style-type: none"> <li>Separate data from the use of data</li> <li>Improve data latency</li> <li>Improve user experience and self-service</li> <li>Safeguard the integrity of a core set of common data</li> </ul>                        |
| 6 Engage the business & IT to transform data and analytics and ultimately empower user innovation       | <ul style="list-style-type: none"> <li>Create a data and analytics culture</li> <li>Manage organizational change</li> <li>Industrialize and accelerate innovation</li> </ul>                                                                              |

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## The Strategic Goals, Sub-goals and Guiding Principles will be confirmed in Workshop 2



# Guiding Principles aligned with each of the Strategic Goals act as “guardrails” for decision making

Sample

Strategic Goals and guiding principles were developed to inform roadmap creation and ongoing Analytics execution

| Strategic Goal                                                                                                 | Guiding Principle              | Guiding Principle Target                                                                                     |
|----------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>1</b> Establish the foundation for reliable analytics by facilitating data identification and access        | <b>1: Data Sharing</b>         | Open by Default<br>Closed by Default                                                                         |
| <b>2</b> Provide reusable services for data integration to expedite delivery and provide end-to-end visibility | <b>2: Data Identification</b>  | IT Tagging<br>Business Tagging                                                                               |
| <b>3</b> Supply the robust processes and tools needed to aid in data understandability and consistency         | <b>3: Data Integration</b>     | Enterprise Run<br>Function Run                                                                               |
| <b>4</b> Provide analytical agility through nimble data adaptability and use techniques                        | <b>4: Data Definitions</b>     | Data Definitions are exclusively provided by IT<br>Data Definitions are exclusively embedded in the business |
| <b>5</b> As part of a unified data and analytics platform, enable self-service data usage and analysis         | <b>5: Data Treatment</b>       | All Data is Treated the Same<br>Data is Treated Differently Based On its purpose                             |
| <b>6</b> Engage the business & IT to transform data and analytics and ultimately empower user innovation       | <b>6: Investment Focus</b>     | Multidimensional Organizational Investment<br>Technology Investment                                          |
|                                                                                                                | <b>7: Data Usage</b>           | One-Size Fits All<br>Fit-for-Purpose                                                                         |
|                                                                                                                | <b>8: IT Engagement</b>        | IT is Not Responsible<br>IT is Completely Responsible                                                        |
|                                                                                                                | <b>9: Business Involvement</b> | Business is Completely Engaged<br>Decisions are Made Within IT                                               |

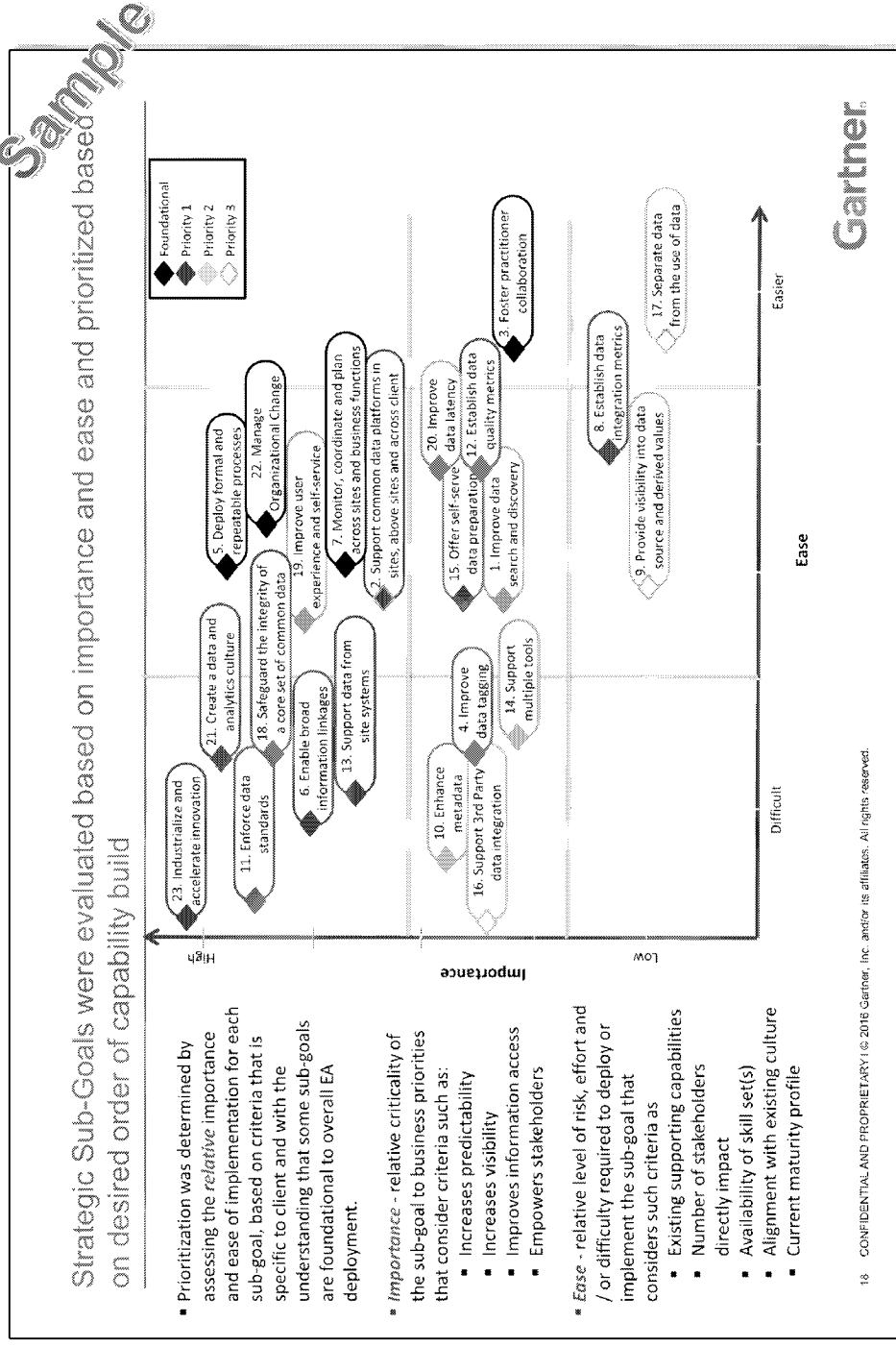
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◆ The Strategic Goals, Sub-goals and Guiding Principles will be confirmed in Workshop 2



# Prioritizing Strategic Sub-goals provides the Data and Analytics “Capability” focus for the Target State



## ◆ The Strategic Goals, Sub-goals and Guiding Principles will be confirmed in Workshop 2

Step 4: Target State Design and Business Value Estimate



Step 4: Target State Design and Business Value Estimate



Step 4: Target State Design and Business Value Estimate



Step 4: Target State Design and Business Value Estimate



Step 4: Target State Design and Business Value Estimate



Step 4: Target State Design and Business Value Estimate





Step 4: Target State Design and Business Value Estimate



Step 4: Target State Design and Business Value Estimate



Step 5: Roadmap and Implementation Plan





## Approach Detail

### Summary of Deliverables

| Step                                                    | Deliverables                                                                                                                | Date          |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------|
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| Step 5: Roadmap and Implementation Plan                 | <ul style="list-style-type: none"> <li>Roadmap</li> <li>Implementation Plan</li> </ul>                                      | Nov 6, 2017   |

## **Terms and Conditions**

- **Gartner Unique Value**
- **Roles and Responsibilities**
- **Team Biographies**
- **Project Management and Control**
- **Assumptions**
- **Investment Summary**
- **Changes to Scope**
- **Validity Period and Further Assurances**
- **Authorization**

## Gartner provides a unique value proposition for creating a Data Strategy and Roadmap

---

Data & Analytics is a focus of Gartner Research and Consulting, with thousands of client inquiries, hundreds of research notes published and multiple Summit Events conducted globally each year.

We are objective and independent; we represent your best interests with no hidden agenda because we have no downstream build or operations conflicts of interest.

We are research-driven and benchmark-enabled; leveraging our best practice frameworks, we can rapidly tell you what you ***could do***.

We are methodical and collaborative; the value of our partnership comes from infusing your RCMP knowledge with our insights to create a practical roadmap for implementation of what you ***should do*** that is risk-managed.

# Gartner brings unique scale and global IT perspective to your business problems

---

Clients in 10,000 distinct enterprises across 90 countries

## Research

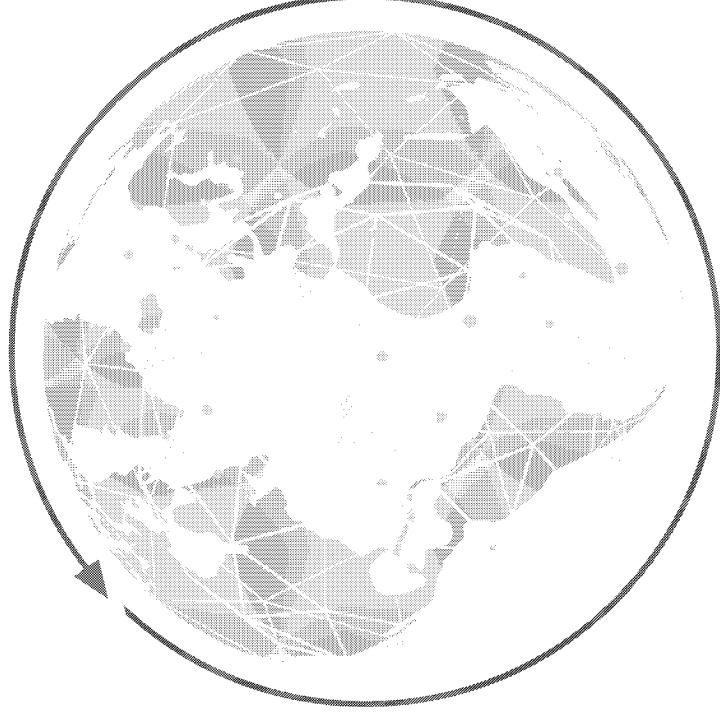
*Industry's largest database*

120,805 documents across  
1,352 technology and business  
topics

## Advisory Services

*Unique client perspective*

1,100 analysts conduct 240,000  
one-to-one client interactions  
annually



## Consulting

*Results on initiatives*

3,200 custom engagements a  
year fueled by 5,000  
benchmarks

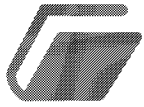
## Events

*Networking with peers*

50,000 professionals a year  
attend 60+ worldwide events



# Accelerate results in the digital world and do more with less with Gartner Consulting



**Make decisions based on independent, objective analysis**

Power of Gartner research — a library of 120,805 documents on 1,352 topics and 100+ key initiatives

Factual advice, grounded in your organization's business objectives and readiness to execute, supports your IT investments



**Stay on the road to success, with less risk**

Seasoned experts who have mitigated risks and driven success on your specific key initiatives and industry

Thought leadership helps you harness the power of emerging and disruptive technologies such as cloud, social, mobile computing, digitalization and big data



**Benchmark accurately to run more efficiently**

The industry's largest IT repository, drawn from 5,000 benchmarks annually

On-site support facilitates knowledge transfer to your staff so they can apply best practices moving forward



**Get more for less with informed IT vendor contracts**

Unique cost and contract optimization expertise ensures fair terms at competitive market prices

Direct support for your team, with insight, experience and powerful tools that drives over \$400 million in client savings every year

# Relevant Research Notes

The Consulting team will leverage Gartner Research, as needed, throughout the engagement. Following is a small sample of recent Gartner research notes that are relevant to RCMP's initiative.

| Research Note Title | Author | Reference |
|---------------------|--------|-----------|
|---------------------|--------|-----------|

# Gartner Roles and Responsibilities

| Gartner Associate | Role | Responsibilities |
|-------------------|------|------------------|
|-------------------|------|------------------|

## Gartner Project Team Organization

---

Gartner has created an organization structure for this engagement that ensures high-level sponsorship and quality assurance, strong day-to-day project management, a focused team of project consultants, and deep subject matter expertise.

# Team Biographies



# Team Biographies



# Team Biographies



## Project Management and Control

---

A number of crucial activities are accomplished via Gartner's project management process, namely:

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                   |                                                                                   |                                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |
| Client<br>Communication                                                             | Schedule<br>Management                                                              | Budget<br>Management                                                                | Quality<br>Deliverables                                                             | Performance<br>Metrics                                                            | Risk<br>Management                                                                | Progress<br>Reporting                                                             |

- Our project management process guides reporting, risk mitigation and project control throughout:
  - Weekly status meetings as defined during the project kickoff
  - Checkpoints and associated deliverable review at the end of each step of the project
  - Gartner will be in constant communication with stakeholders to ensure full awareness of activities, the associated timeline and actions required to ensure efficient control of project change



## Assumptions

### RCMP Participation

---

The deliverables, schedule and pricing in this proposal are based on the following assumptions:

- RCMP Participation
  - RCMP will designate a project manager to act as the primary point of contact for this project. The RCMP project manager will be expected to work closely with the Gartner employees as needed and will: (a) approve project priorities, detailed step plans and schedules; (b) facilitate the scheduling of Gartner interviews with appropriate client personnel; (c) notify Gartner in writing of any project or performance issues; and (d) assist in resolving project issues that may arise
  - The work effort described in this Proposal assumes RCMP personnel are available to assist in the manner defined in this Proposal. In the event that RCMP personnel are not available, a change of scope may be necessary
  - RCMP will review and approve documents within five business days. If no formal approval or rejection is received within that time, the deliverable is considered to be accepted by RCMP
  - RCMP will schedule RCMP resources for project activities and provide meeting facilities as necessary
  - RCMP personnel will be available per the final project schedule

# Assumptions

## Data Collection and Key Personnel

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- Data Collection
  - The due diligence (as-is) data are reasonably available via interviews and documentation review
  - RCMP will provide timely access to all appropriate personnel to be interviewed. These personnel will provide data necessary to complete this project, answer questions, provide existing documentation and attend working sessions
  - Project pricing is based on the assumption that Gartner will conduct 15 interviews/workshops over a period of 5 days and that RCMP will arrange all sessions with RCMP personnel
  - Gartner will conduct up to two validation sessions to:
    - Confirm understanding of the business context and current state
    - Present and confirm understanding of the Strategy and Target State charter and governance framework
  - All data collection and interviews/workshops will take place via telephone or in person at location as described in this Proposal and/or as agreed to at the project kickoff
- Key Personnel
  - Resumes of key personnel provided in this Proposal assume a project start date of June 12, 2017. If the actual project start date is different, proposed individuals may not be available. In this event, we will work with RCMP to identify alternative personnel with appropriate skills and background

## Assumptions

### Place of Performance, Deliverables and Changes to Scope

---

- Place of Performance
  - Except for meetings and workshops, all Gartner services will be performed at Gartner locations
  - Office space, telephones, printing/copying services and access to the open Internet will be made available on a reasonable basis to Gartner at RCMP locations for onsite project time
- Deliverables and Changes to Scope
  - Any requests for additional information or resource (beyond the details described in the steps above) that are made by RCMP will be considered a change in scope for this project and will be handled accordingly (see Changes to Scope section of this Proposal)
  - All deliverables will be developed using Microsoft products (e.g., Word and PowerPoint)

# Investment Summary and Invoicing

| NMSO Line Items                                             |  | Price        |
|-------------------------------------------------------------|--|--------------|
| Maturity: IT Strategy (BI & Analytics) Benchmark Assessment |  | \$80,588.00  |
| Service Delivery (BI & Analytic)                            |  | \$80,588.00  |
| 2 x One Day Workshop @\$13,500                              |  | \$26,500.00  |
| Total                                                       |  | \$187,676.00 |
| HST                                                         |  | \$24,397.88  |
| Total                                                       |  | \$212,073.88 |
| Travel & Living (Capped – includes HST)                     |  | \$12,000.00  |

Gartner will bill in accordance with the invoice terms & conditions contained in the NMSO E60ZM-140002/001/ZM, invoices are due in 30 days. Note, NMSO terms are:

Gartner will bill per the NMSO:

- 25% upon completion of Task 1 – Project Initiation
- 50% upon completion of Task 3 – Strategy Benchmark
- 25% upon completion of Task 4 – Final Report and Recommendations

Travel and other reimbursable expenses are billed as incurred. Gartner will cap the travel expenses at \$12,000.00 CDN including applicable taxes.

## Changes to Scope

---

The scope of this project is defined by this Proposal/Statement of Work. All RCMP requests for changes to the SOW must be in writing and must set forth with specificity the requested changes. As soon as practicable, Gartner shall advise RCMP of the cost and schedule implications of the requested changes and any other necessary details to allow both parties to make an informed decision as to whether they will proceed with the requested changes. The parties shall agree in writing upon any requested changes prior to Gartner commencing work.

As used herein, “changes” are defined as work activities or work products not originally planned for or specifically defined by this SOW. By way of example and not limitation, changes may include the following:

- Any activities not specifically set forth in this SOW
- Providing or developing any deliverables not specifically set forth in this SOW
- Any change in the respective responsibilities of Gartner and RCMP, including any reallocation or any changes in engagement or project manager staffing
- Any rework of completed activities or accepted deliverables
- Any investigative work to determine the cost or other impact of changes requested by RCMP
- Any additional work caused by a change in the assumptions set forth in this SOW
- Any delays in deliverable caused by modification of acceptance criteria in this SOW
- Any changes requiring changes to research analyst time or resources

## Validity Period and Further Assurances

---

The Proposal, including the Statement of Work, is valid for 60 days from 22 September 2017.

Gartner Research and Consulting recommendations are produced independently by the Company's analysts and consultants, respectively, without the influence, review or approval of outside investors, shareholders or directors. For further information on the independence and integrity of Gartner Research, see "[Guiding Principles on Independence and Objectivity](#)" on our website, [gartner.com](http://gartner.com) or contact the Office of the Ombudsman at [ombudsman@gartner.com](mailto:ombudsman@gartner.com) or +1 203 316 3334.

## Authorization

This Proposal/Statement of Work is submitted under the terms and conditions of NMSO E60ZM-140002/001/ZM. Note, NMSO terms are: When signed by Gartner and RCMP, this Proposal/Statement of Work is an attachment to and governed by the NMSO. The NMSO will set forth the relationship between the parties for this project. This Statement of Work may be modified at anytime provided such changes (i) are agreed by the parties in writing and (ii) where applicable, are in accordance with the Change Order provision.

SUBMITTED ON BEHALF OF GARTNER CANADA CO.



SIGNATURE

Chuck Henry, Senior Managing Partner

PRINT NAME AND TITLE

24 July 2017

DATE

AGREED ON BEHALF OF RCMP

SIGNATURE

PRINT NAME AND TITLE

DATE

PO NUMBER (If applicable)

# Contacts

---

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chuck.henry@gartner.com

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Canada Public Sector  
Gartner Consulting  
Telephone: +1 613 286 50212  
paul.haskins@gartner.com





# **Data and Analytics Strategy and Roadmap**

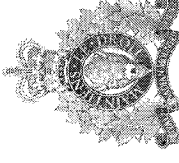
## **Findings Validation Workshop**

**May 4, 2018**

**Prepared for: RCMP**

**Project : 330044776**

**GARTNER CONSULTING**

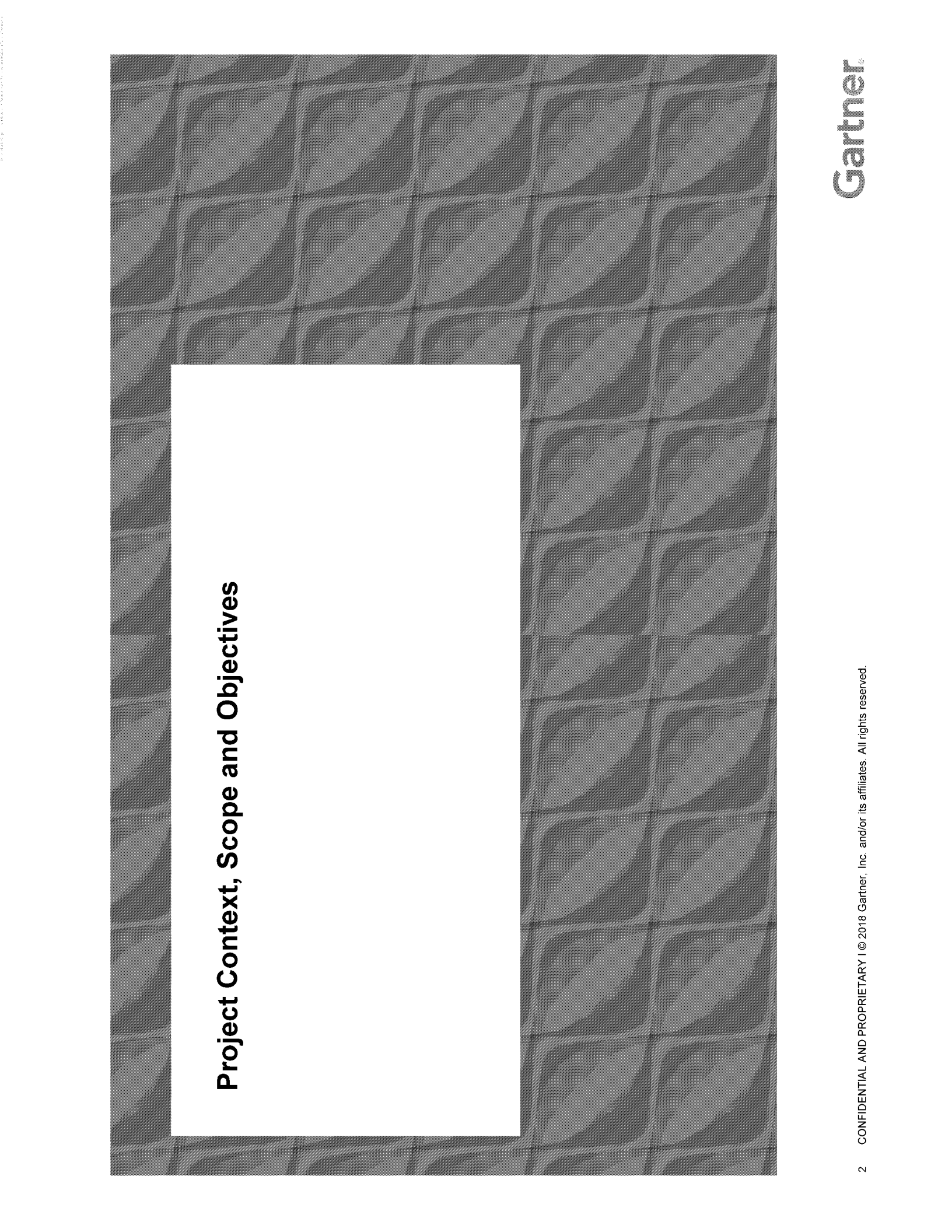


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## Today's Agenda

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- Project Context, Scope and Objectives
- Gartner Point of View
- Our Approach
- Initial Findings
- Maturity Assessment and Peer Benchmarking
- Business Use Cases
- Appendix A – List of Interviewees
- Appendix B – Documentation Reviewed
- Appendix C – Maturity Model Definitions
- Appendix D – Recommended Research
- Appendix E – Additional Reference and Definitions



## **Project Context, Scope and Objectives**

## Context, Scope and Objectives

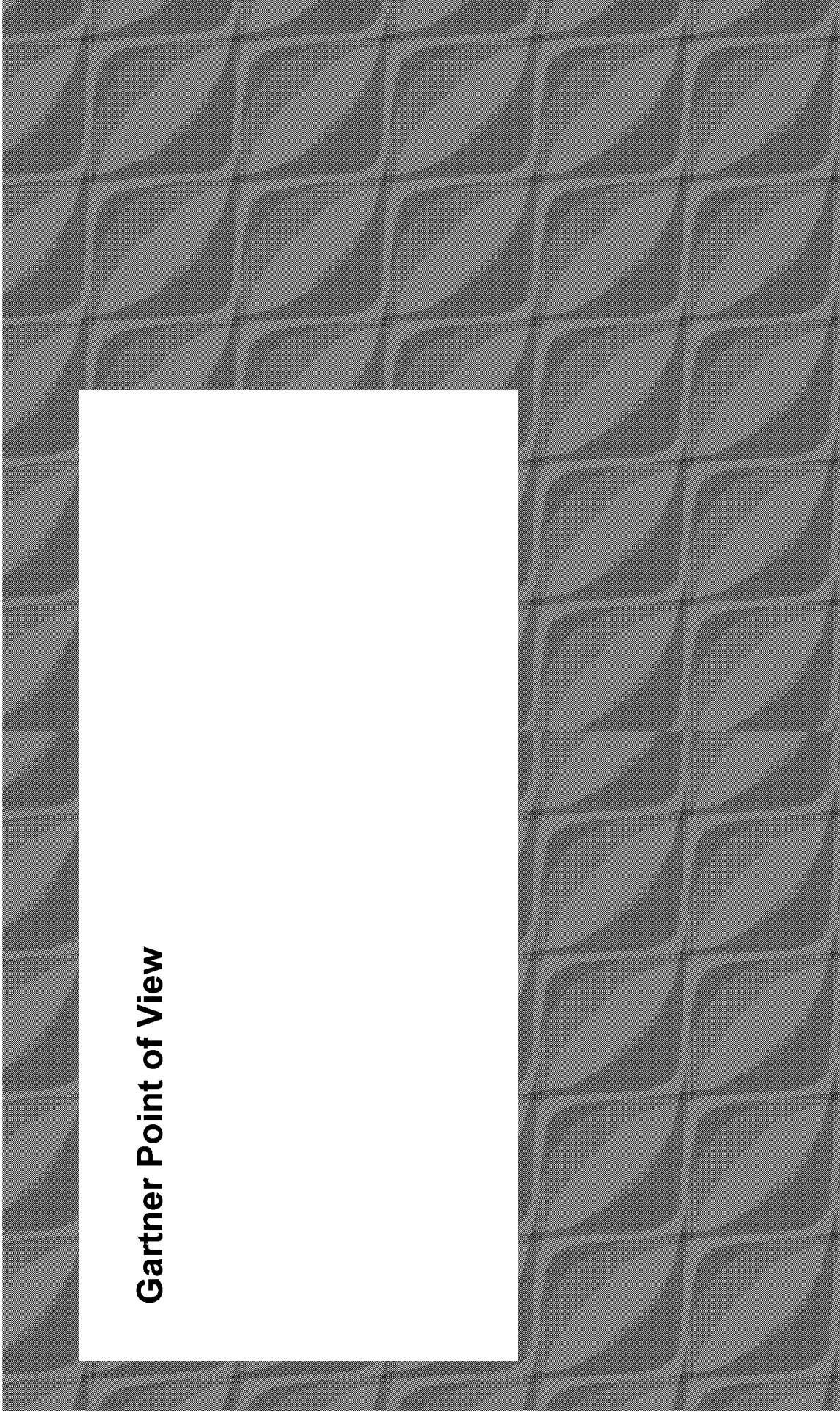
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### Context

- RCMP realizes the importance of analytics to support informed decision making within the organization and has already made investments in this area.
- The analytics market has evolved rapidly in the last two years with the promise of artificial intelligence and machine learning providing a dramatic improvement in the accuracy and speed of decisions.
- The RCMP must evolve beyond providing data for human interpretation to a position where information and algorithms are trusted and adopted for recommendation and action in operational settings.
- The RCMP engaged Gartner as partner to create a Data and Analytics Strategy and a Roadmap for implementing that Strategy over a three-year period including a prioritized and sequenced set of initiatives and supporting estimates.

### Scope and Objectives

- The key objectives of the engagements include:
  - Creation of a Data and Analytics Strategy in a practical manner
  - Development of a 3-year roadmap to implement that strategy.
- This effort addresses the three workstreams which RCMP require:
  - Analysis and Recommendations (Strategy) including tools and organization
  - Business Value of enabling business capabilities including benefits and cost avoidance
  - Roadmap and Implementation Plan for a 3-year period
- The Scope is limited to RCMP but will identify practices and tools that support RCMP obligations to central agencies and information sharing with recognized partners, GC departments and international agencies.



## **Gartner Point of View**

## Gartner Point of View

- 1 Intelligence is comprised of Data and Algorithms enabling informed decision-making
- 2 Comprehensive analytics architecture, move to Cloud, and AI/Machine Learning will drive innovation
- 3 Greater scale, efficiency and fidelity can be achieved with the introduction of decision models and algorithms acting on high quality, rich information
- 4 Business Intelligence and Analytics represent the top technology areas for investment among Federal CIOs
- 5 Culture challenges to accept change stands out as the biggest roadblocks to success
- 6 Digital organizations require a bimodal approach to analytics to drive innovation, agility and speed
- 7 Organizations are becoming truly "data-driven" with advanced analytics, machine learning, and artificial intelligence as having the biggest potential impact to drive change
- 8 Organizations are evolving business intelligence competency centres (BICCs) to analytics centres of excellence (ACEs) to focus on advanced analytics and deriving value from data
- 9 Organizations are adopting logical data warehouse (LDW) as an architecture moving forward to modernize information infrastructure by combining both the data lake and the EDW approaches











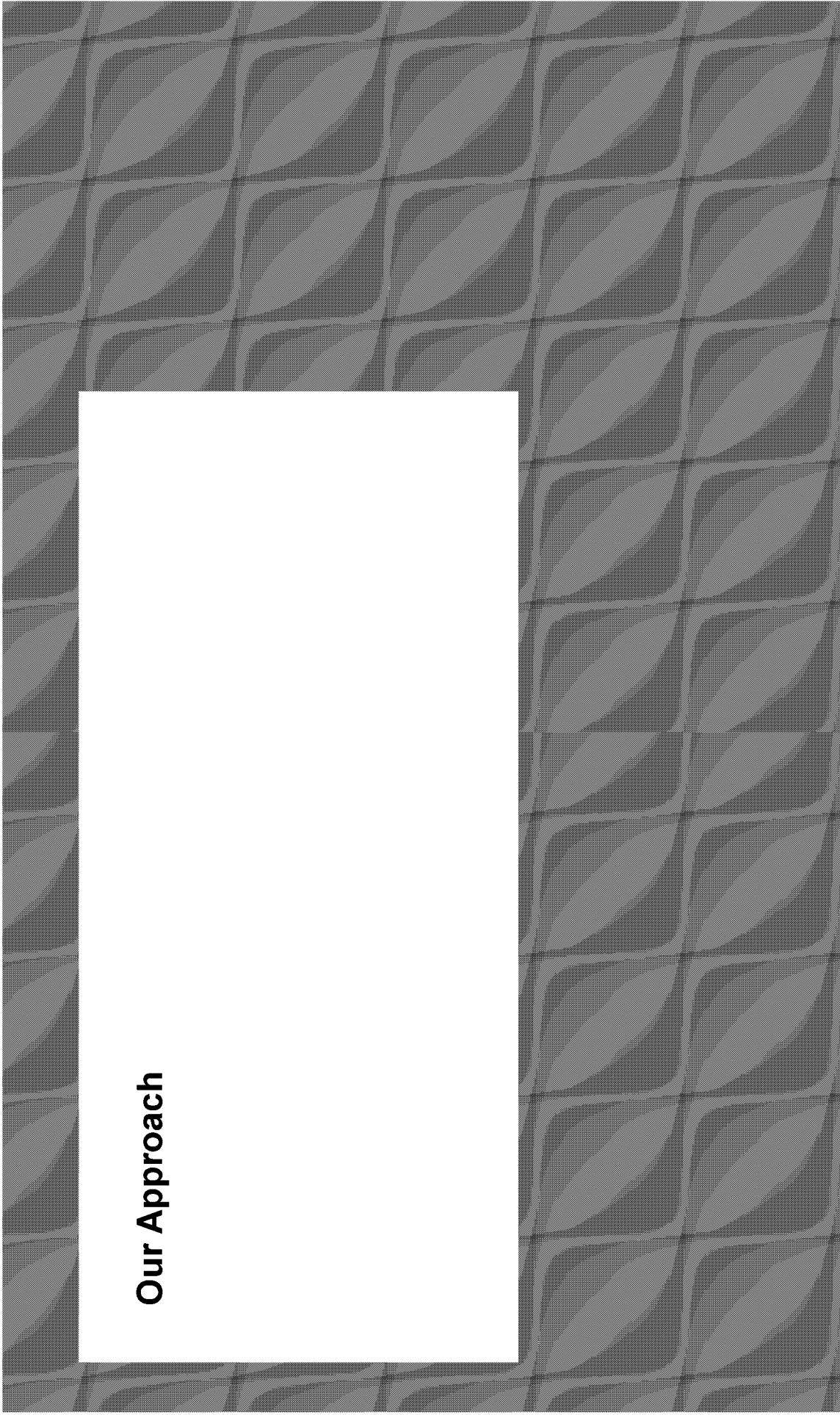








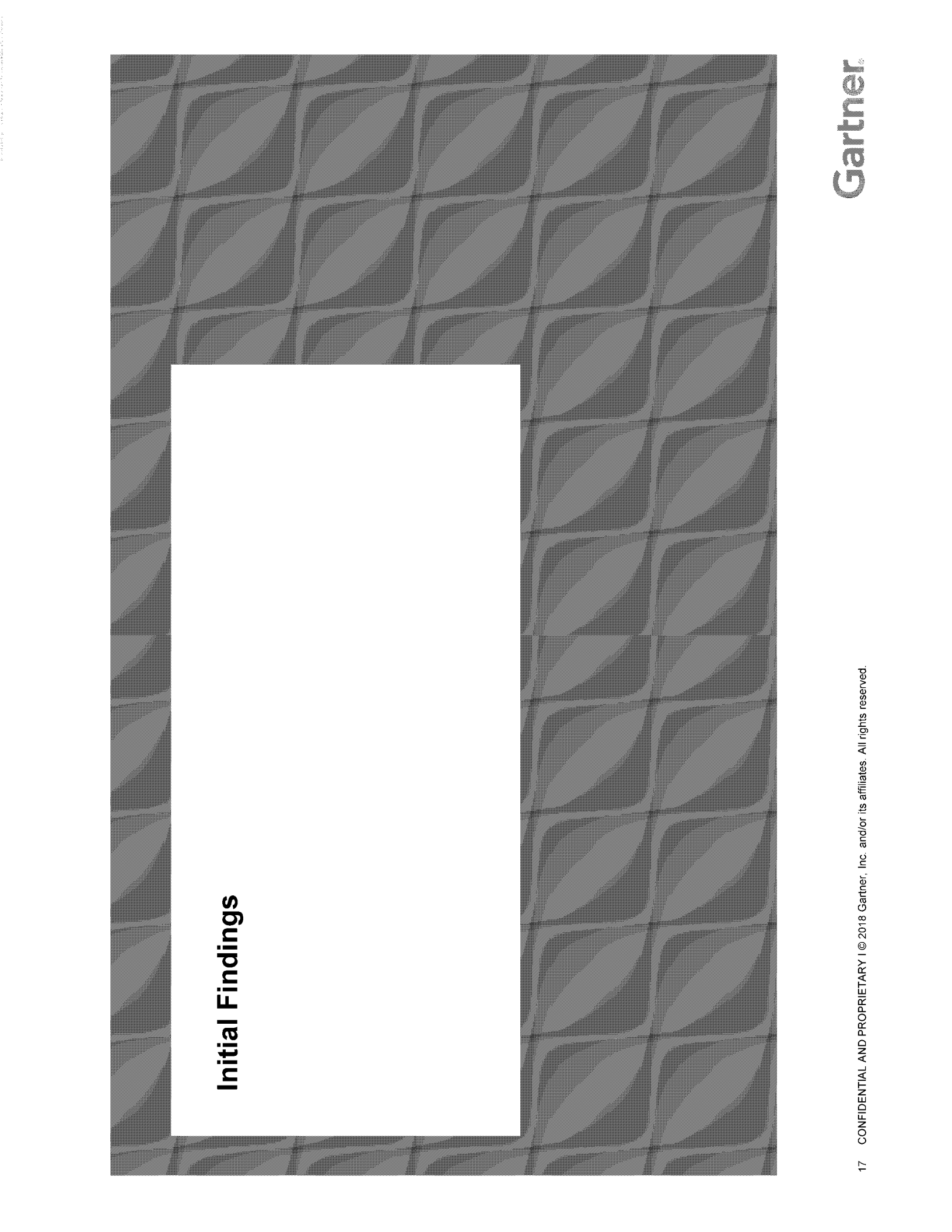




## Our Approach







## Initial Findings

# Approach and Objectives for this section

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## Executive Overview









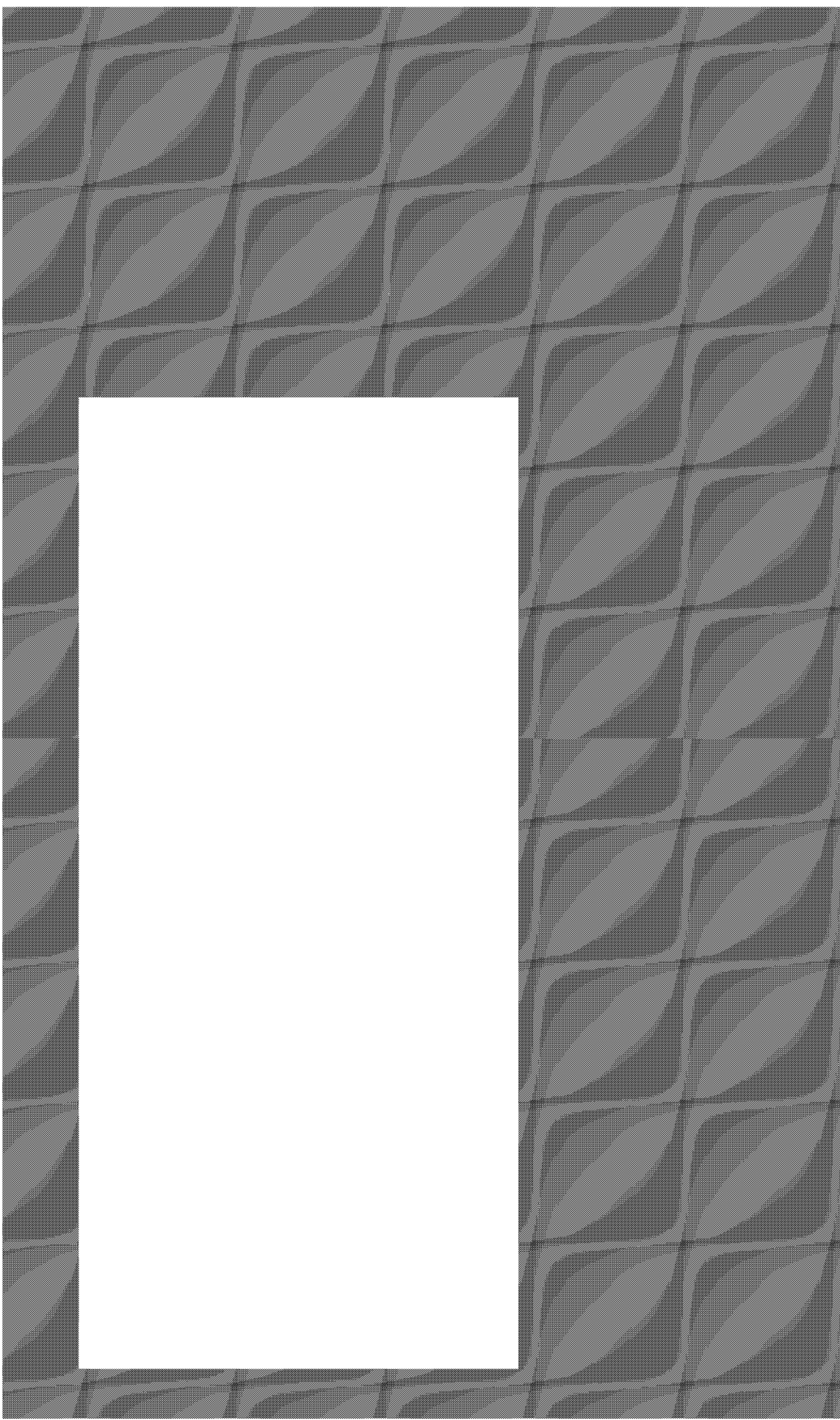




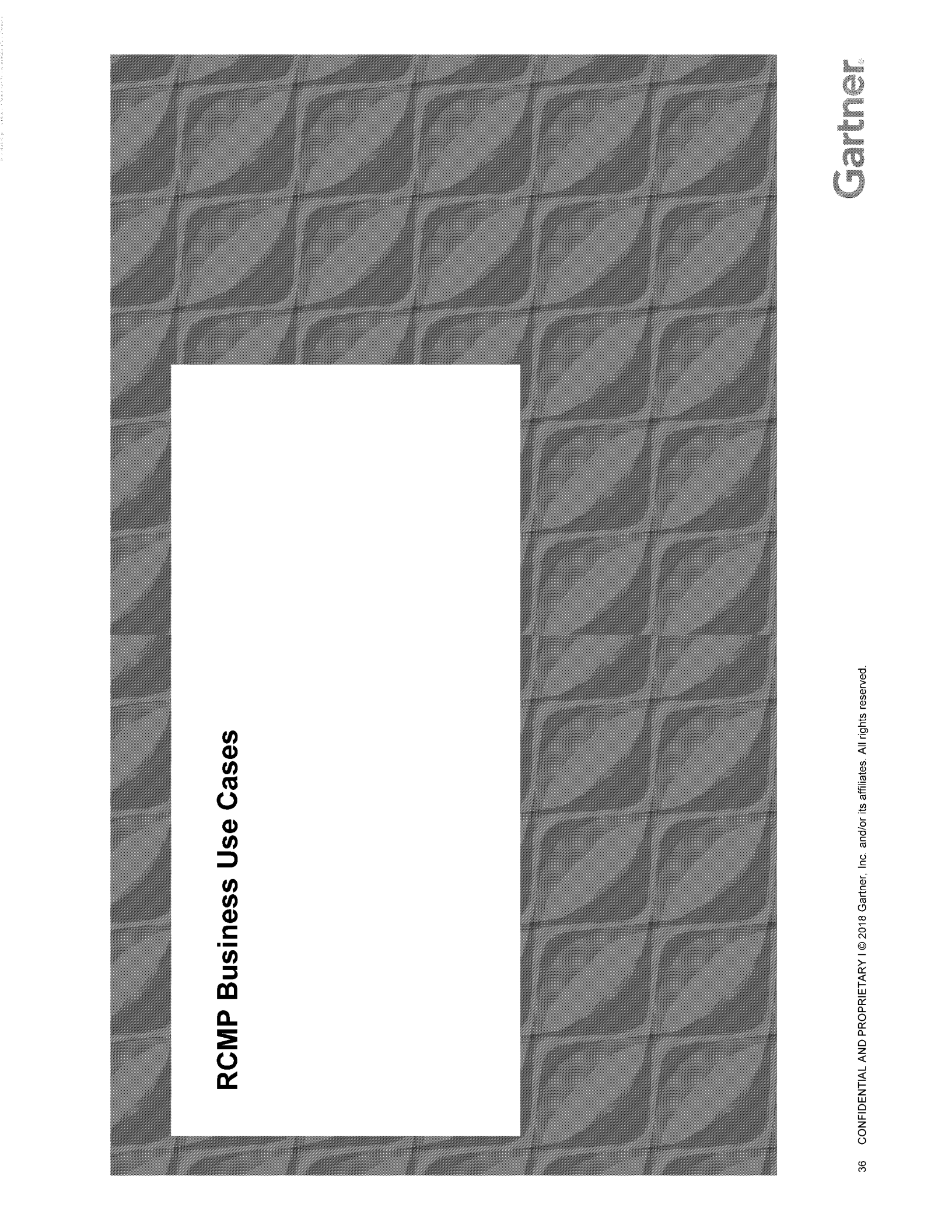






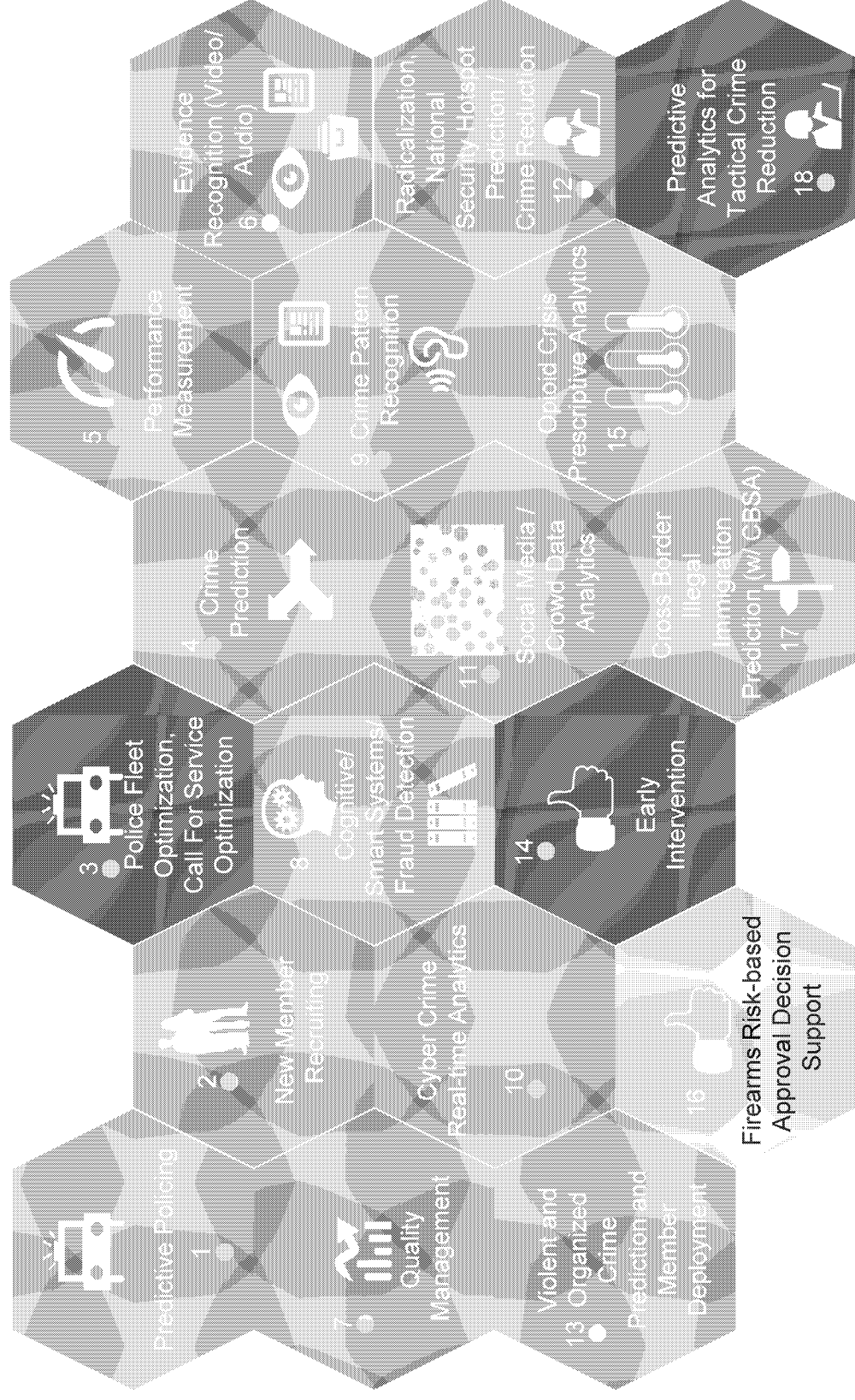






## RCMP Business Use Cases

These Analytics capabilities have broad application across the RCMP. Potential high value use cases include Predictive Policing, Crime Prediction, New Member Recruitment, Evidence Recognition (Video / Audio)



**Legend:**

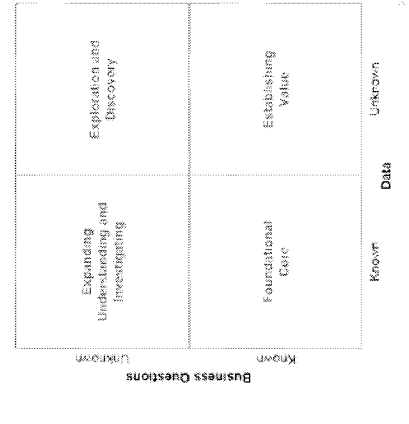
- IM for Intelligence
- IM for the Frontline
- IM for Investigations
- IM Services Delivery
- IT Enablers

<sup>1</sup> The above select business use cases were identified for RCMP using Gartner's Analytic Capability Explorer to take a business priority driven perspective.

<sup>2</sup> The list of use cases is not exhaustive and provided for the purpose of demonstrating how data challenges can be solved using Data Management Infrastructure model.

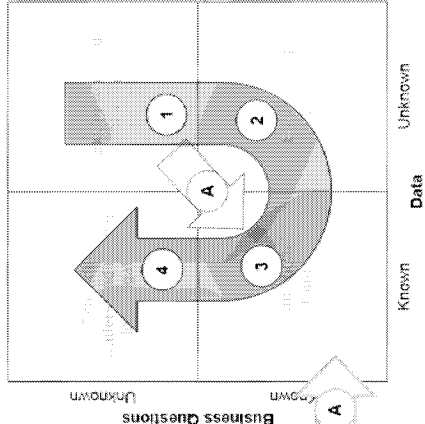
# Data and analytics leaders should use this Data and Analytics Logical Infrastructure Model to rationalize their data management strategies and infrastructure

The concepts of known versus unknown data (x-axis on the model), and known versus unknown business questions (y-axis on the model), provide the foundation for the data management infrastructure model.

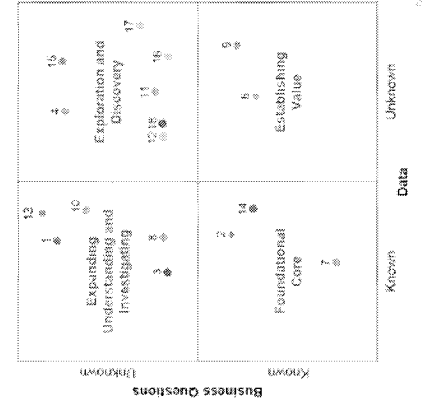


The four sectors of the model align with core business needs established through these known and unknown characteristics:

- **Known Data/Known Business Questions**
- **Unknown Data/Unknown Business Questions**
- **Unknown Data/Known Business Questions**
- **Known Data/Unknown Business Questions**



The approach allows to build layered Information Governance processes that address what needs to happen to data when it goes from unknown to known and vice versa.

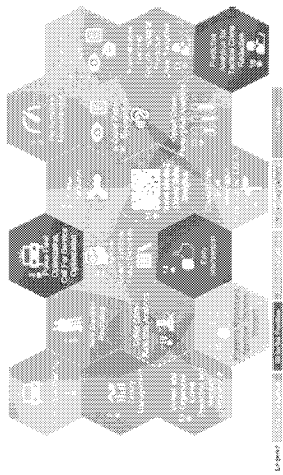
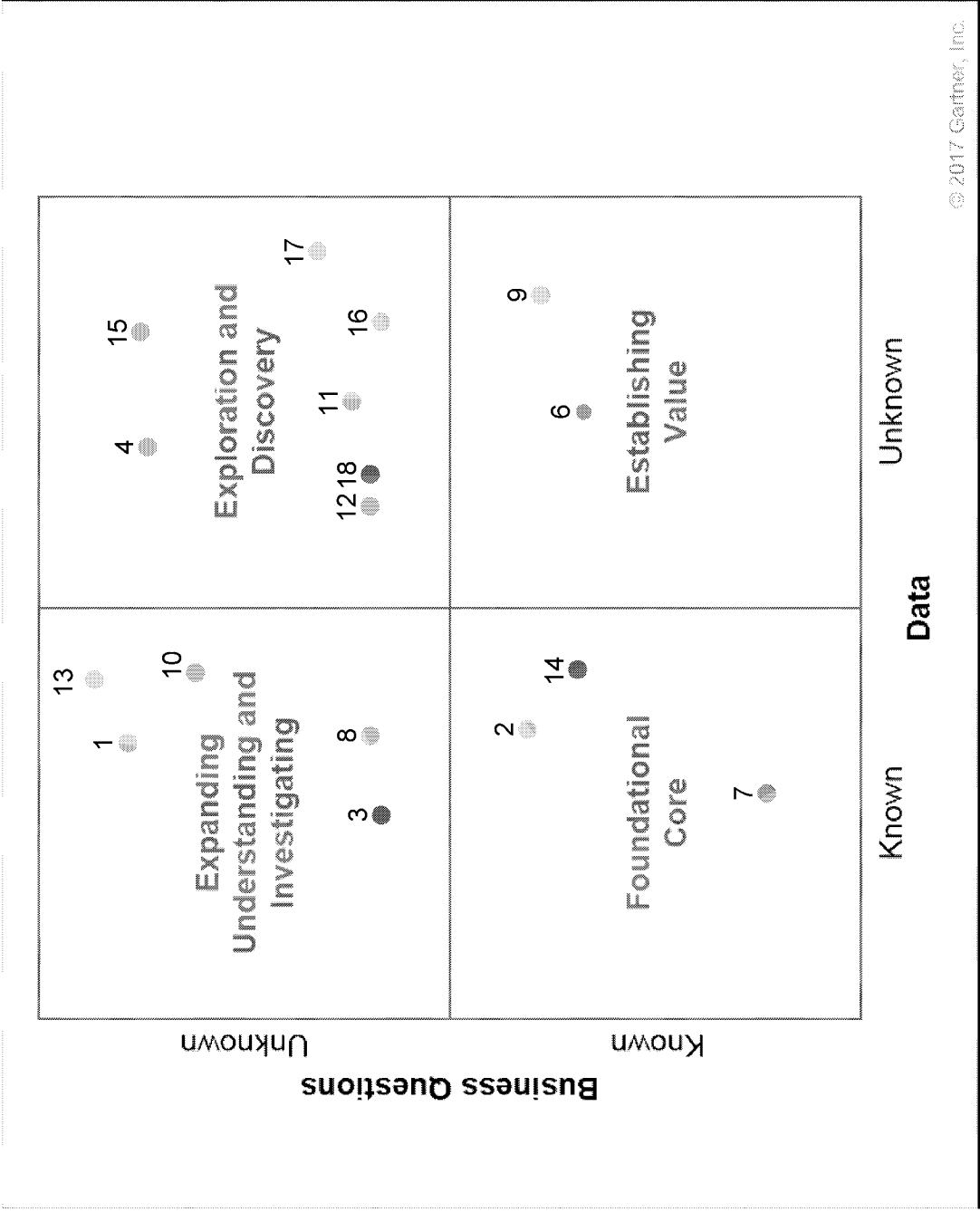


The identified use cases are mapped to Data and Analytics Logical Infrastructure Model to provide guidance on data and analytics strategy alignment with process, information governance and technology implications.

As business use cases move from one sector of the model to another, or from one half of the matrix to another, there are process and governance implications.



# Use Case Mapping on to the Data Management Infrastructure Model



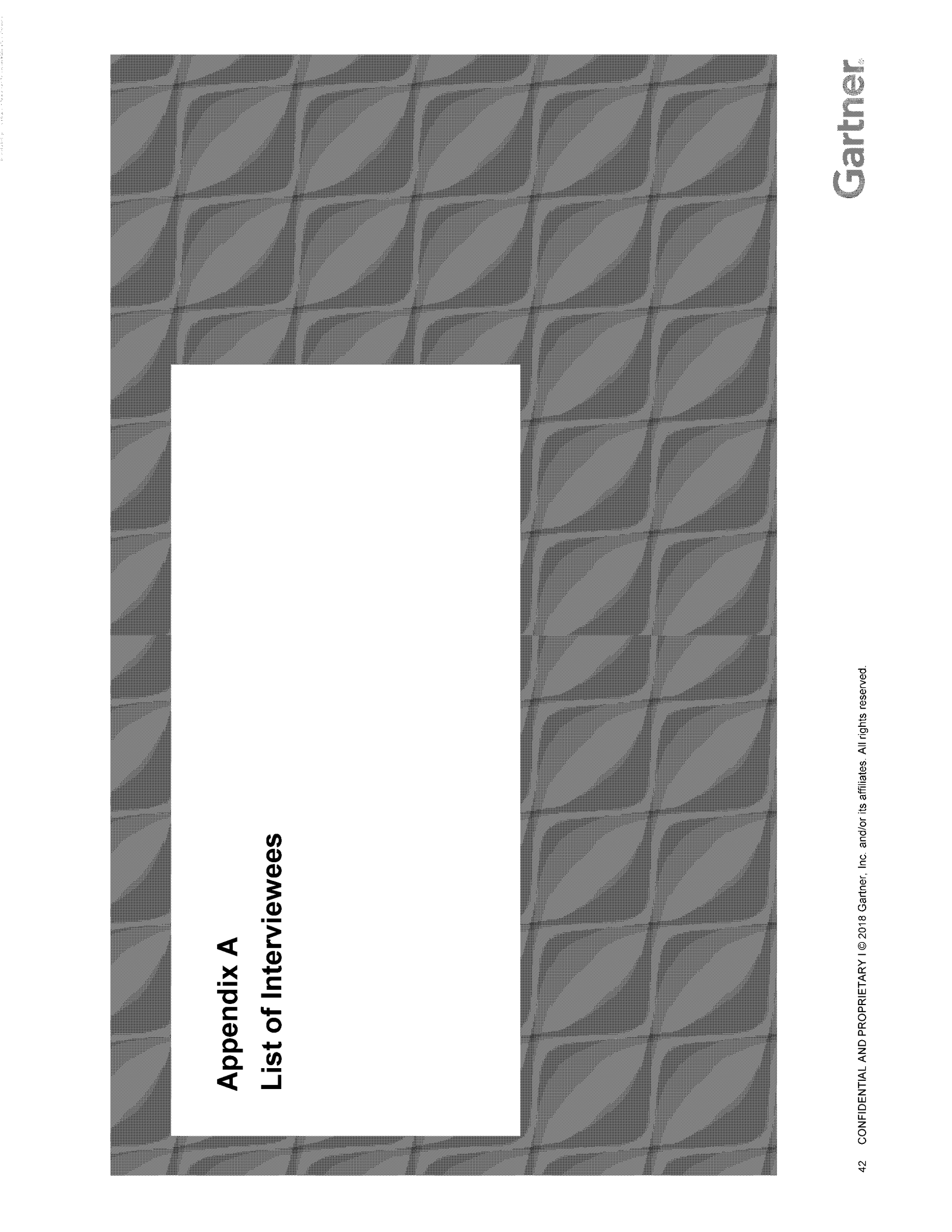


## Next Steps

## Next Steps

---

- Update Current State Findings by incorporating feedback from today's validation workshop



## **Appendix A**

### **List of Interviewees**

## Interview Participants

### Gartner interviewed over 50 representatives from RCMP

| Organization                                                                                          | Representatives                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Forensic Science and Identification Services (FS&IS)                                                  | <ul style="list-style-type: none"><li>▪ Jennifer Golin</li><li>▪ Jeff Cheevers</li></ul>                                                                                                                                                                                                                                                                 |
| BI Competency Centre (BICC)                                                                           | <ul style="list-style-type: none"><li>▪ Danielle Dugas</li><li>▪ Justin Sykes</li><li>▪ Sameer Sultan</li></ul>                                                                                                                                                                                                                                          |
| Corporate Management and Comptrollership (Finance, Corporate Budgeting, Comptrollership, Procurement) | <ul style="list-style-type: none"><li>▪ David Wiseman</li><li>▪ Dwayne Ross</li></ul>                                                                                                                                                                                                                                                                    |
| BI Solution Teams (Canadian Police College, Tech Ops, IM, SPS)                                        | <ul style="list-style-type: none"><li>▪ Luc Couture</li><li>▪ Claude Evraire</li><li>▪ Alison Ste Marie</li><li>▪ Jeff Cheevers</li></ul>                                                                                                                                                                                                                |
| IM-IT (EDMS, EDW, BI Group, IM, Cognos, ADB)                                                          | <ul style="list-style-type: none"><li>▪ Allen Williamson</li><li>▪ Sylvie Cote</li><li>▪ Bill McLeod</li><li>▪ Jeff Ball</li><li>▪ Sylvie Cote</li><li>▪ Sheila Millar</li><li>▪ Moe Osman</li><li>▪ Chris Kwiatkowski</li><li>▪ Dusan Musal</li><li>▪ Renee Hartwell</li><li>▪ Sanjeev Sinha</li><li>▪ Eldon Mellaney</li><li>▪ Roy Patterson</li></ul> |

## Interview Participants

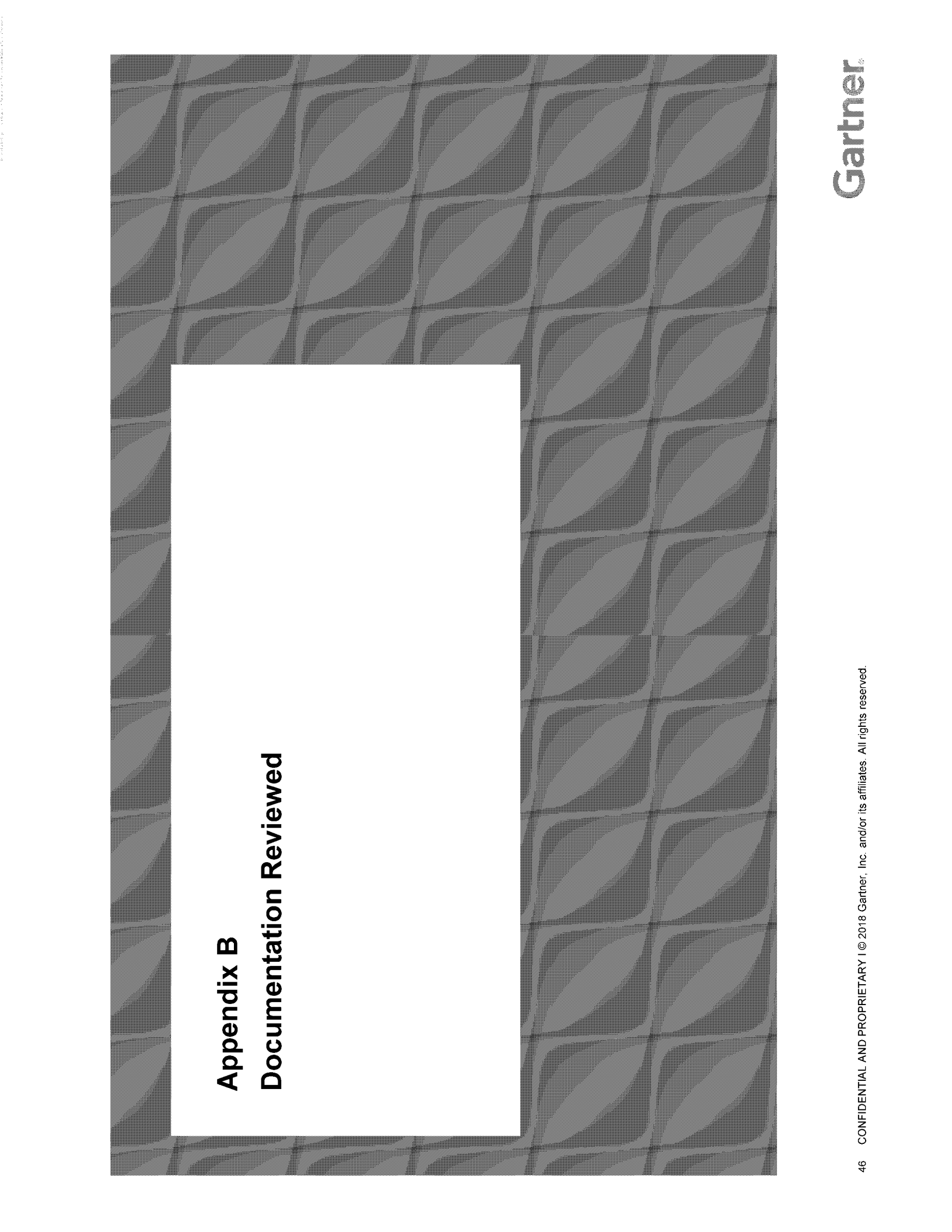
### Gartner interviewed over 50 representatives from RCMP

| Organization                              | Representatives                                                                                                                                                                                                                                                      |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Human Resources                           | <ul style="list-style-type: none"><li>▪ Julie Taylor</li><li>▪ Kelli Butler</li><li>▪ Glenn Duncan</li><li>▪ Stephanie Schreiber</li><li>▪ Maxime Boutin</li><li>▪ Christian Pharand</li><li>▪ Charlie Zhang</li><li>▪ Chris Donnelly</li><li>▪ Sara Lowes</li></ul> |
| Strategic Policy and Planning Directorate | <ul style="list-style-type: none"><li>▪ Lorelei Rollings</li><li>▪ James Lea</li></ul>                                                                                                                                                                               |
| Specialized Policing Services             | <ul style="list-style-type: none"><li>▪ François Bidal</li><li>▪ Joe Oliver</li></ul>                                                                                                                                                                                |
| Federal Policing                          | <ul style="list-style-type: none"><li>▪ Rose-Marie Bernier</li><li>▪ Michael Bushey</li></ul>                                                                                                                                                                        |
| Canadian Firearms Program                 | <ul style="list-style-type: none"><li>▪ Robert Mackinnon</li><li>▪ Kirk Hickling</li><li>▪ Eric Nowell</li><li>▪ Edward Ballinger</li><li>▪ Ovidio Mendoza</li><li>▪ Jeff Cheevers</li></ul>                                                                         |
| BI Modernization Initiative               | <ul style="list-style-type: none"><li>▪ Cynthia Sun</li></ul>                                                                                                                                                                                                        |
| Contract and Aboriginal Policing          | <ul style="list-style-type: none"><li>▪ Brenda Smith</li><li>▪ Lori Balderston</li><li>▪ Simon Baldwin</li><li>▪ Tram Pham</li></ul>                                                                                                                                 |

Interview Participants

Gartner interviewed over 50 representatives from RCMP

| Organization | Representatives                                                                                                                        |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------|
| E Division   | <ul style="list-style-type: none"><li>▪ Laura Bank</li><li>▪ Caroline Brear</li><li>▪ Lauri Metz</li><li>▪ Danielle Nicolson</li></ul> |



## **Appendix B**

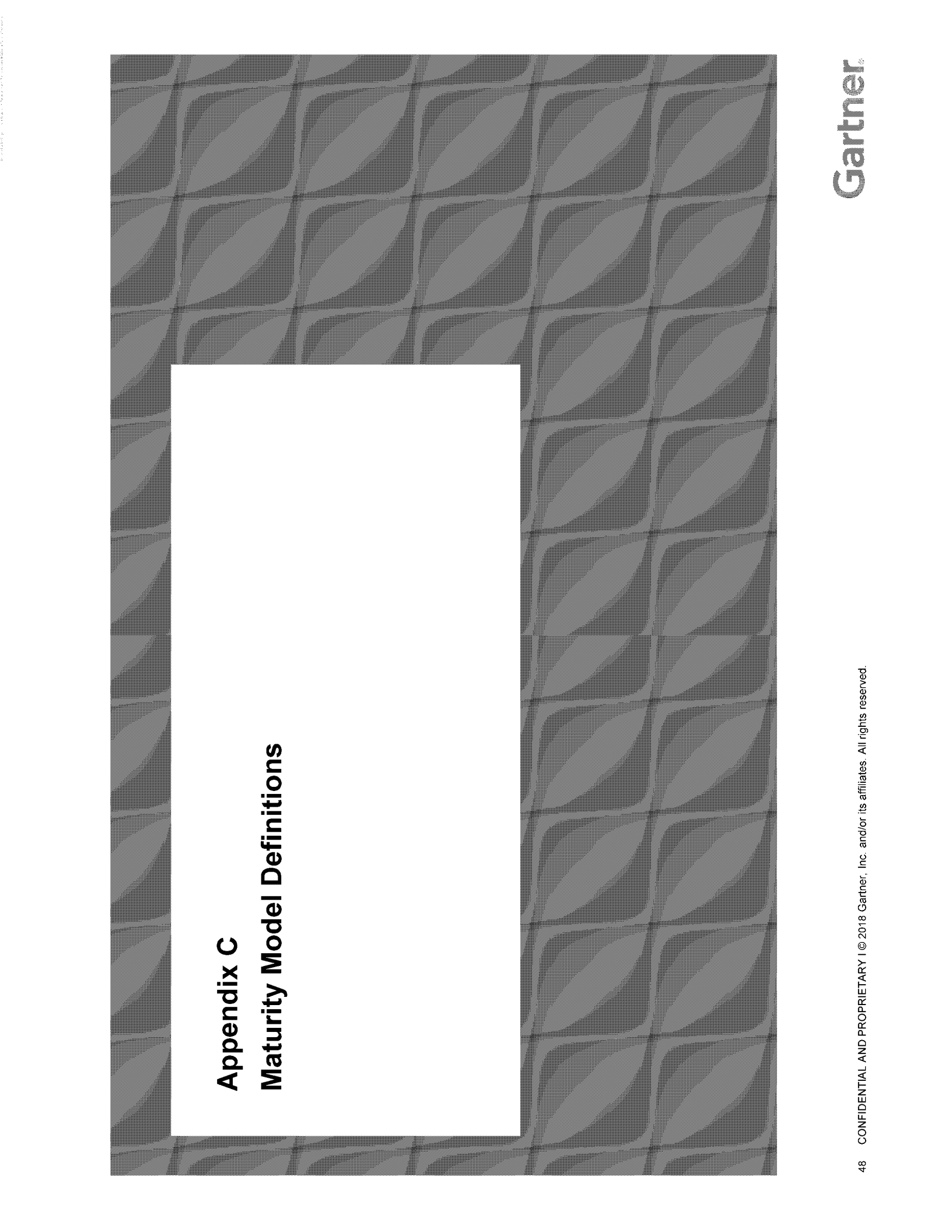
### **Documentation Reviewed**

## Documentation Review Documentation Reviewed

### List of Documents

RCMP Departmental Plan 17-18.pdf  
Z-00512 – Business Intelligence Modernization – PM Team Structure and Role Descriptions.pdf  
BI Program Logic Model.ppt  
BI Project and Program Review.pdf  
EXCERPTS from RCMP Resourcing Review : Final Report May 5, 2015 (Volume I).doc  
RCMP\_Coradix\_BI -Site Survey (BI Strategy and Roadmap).pdf  
Z-00512-BI Modernization-BI Program Roles and Responsibilities-V1.0.pdf  
Z-00512-BI Modernization-PID-V1.1 signed (Project Initiation Document).pdf  
Z-00512-BI Modernization-RCMP PM Team Structure and Role Descriptions-V1.1 signed.pdf  
Success Stories  
RCMP Org Chart (hardcopy, cleansed)  
Issues Matrix Jan 2018.xls  
BI Strategy V.3.doc  
GC BI Roles (Sr. Data Analyst EC-5, Sr. Business Analyst – AS-4)  
BI\_Process\_Intake-Take4-20170619.pdf  
RCMP\_IMR\_Transformation\_Roadmap\_Final.doc  
EDW\_Project\_Charter\_v3.3\_-\_signed.pdf  
EDW Schedule 2018-04-17.pdf  
RTID-#43353-v2-CR-0394\_-\_EDW\_Project\_Reset\_Gartner.doc  
EXCERPTS from RCMP Resourcing Review

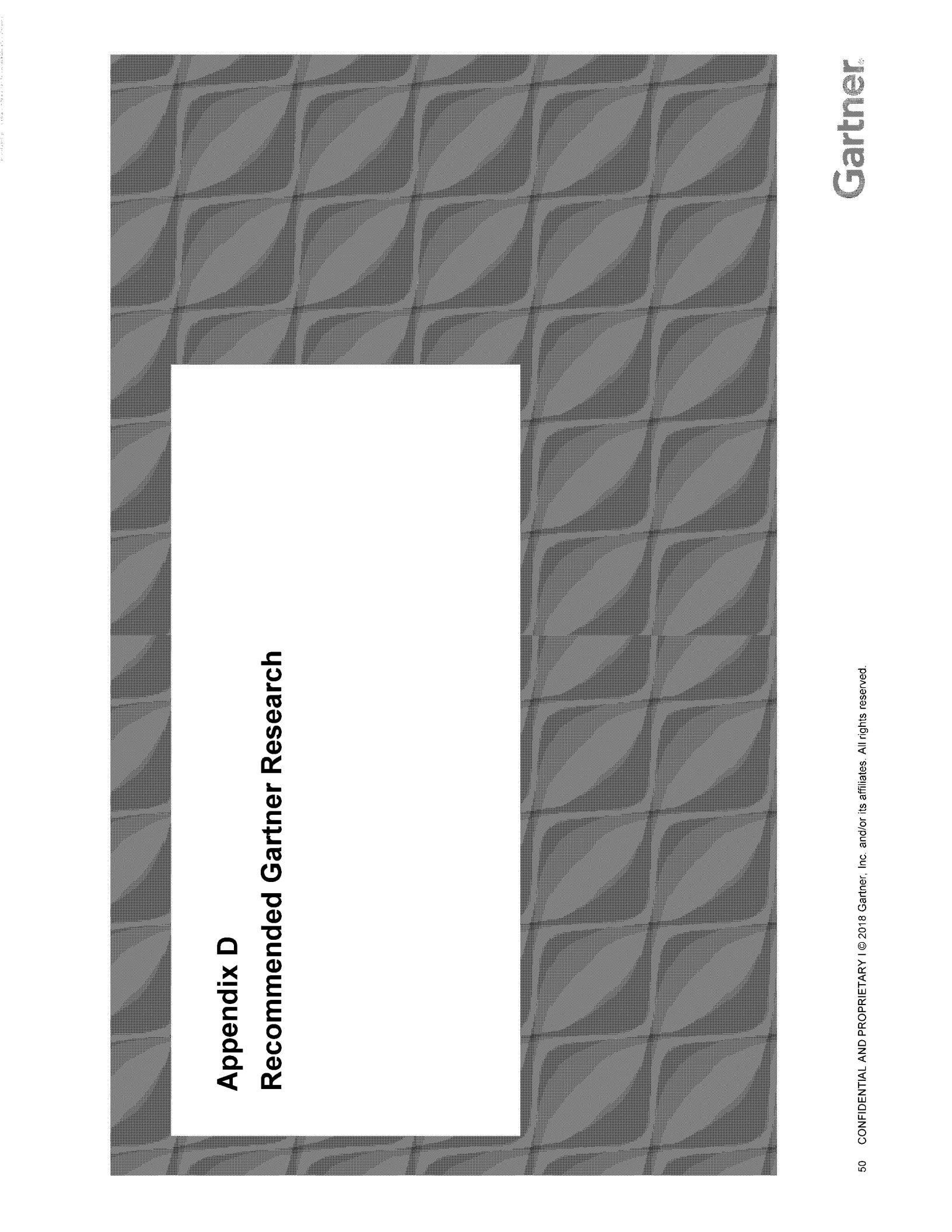




## **Appendix C**

### **Maturity Model Definitions**





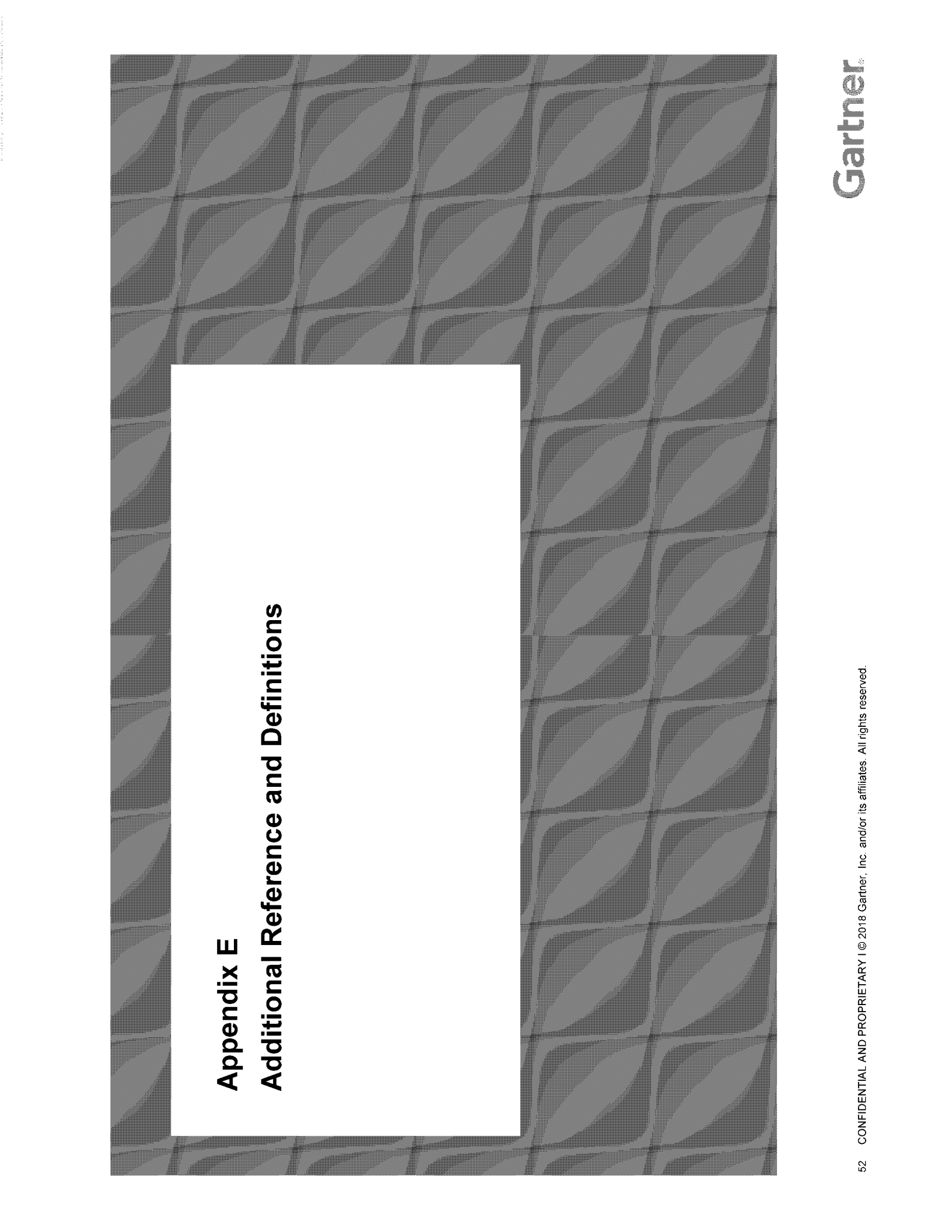
## **Appendix D**

### **Recommended Gartner Research**

# Recommended Gartner Research

During the course of the engagement Gartner team identified the following Gartner Research recommended reading relevant to RCMP's initiative.

| Research Note Title | Author | Reference |
|---------------------|--------|-----------|
|---------------------|--------|-----------|



## **Appendix E**

### **Additional Reference and Definitions**















RCMP was assessed at early Level 2

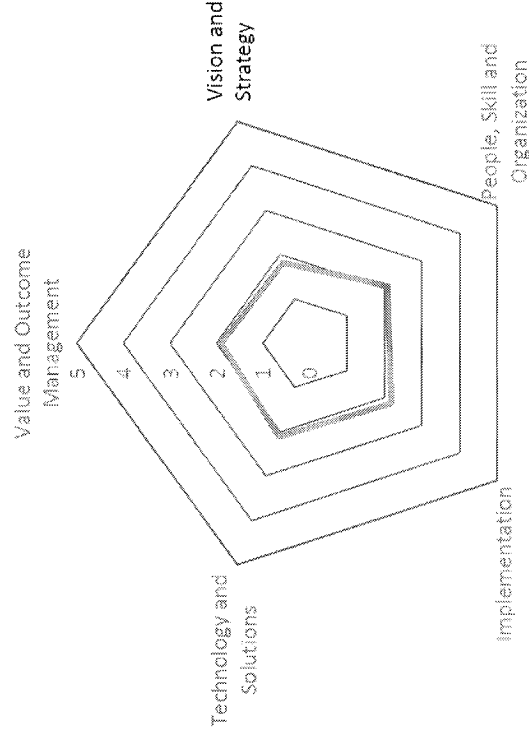
A Level 2 organization does not have much repeatability, because key learnings and improvements are not consistently shared across the organization.

Gartner's maturity model enables organizations to understand their level of BI, data and analytics maturity, identify gaps and determine key next steps to drive enhanced value

### Data and Analytics Maturity Model Score

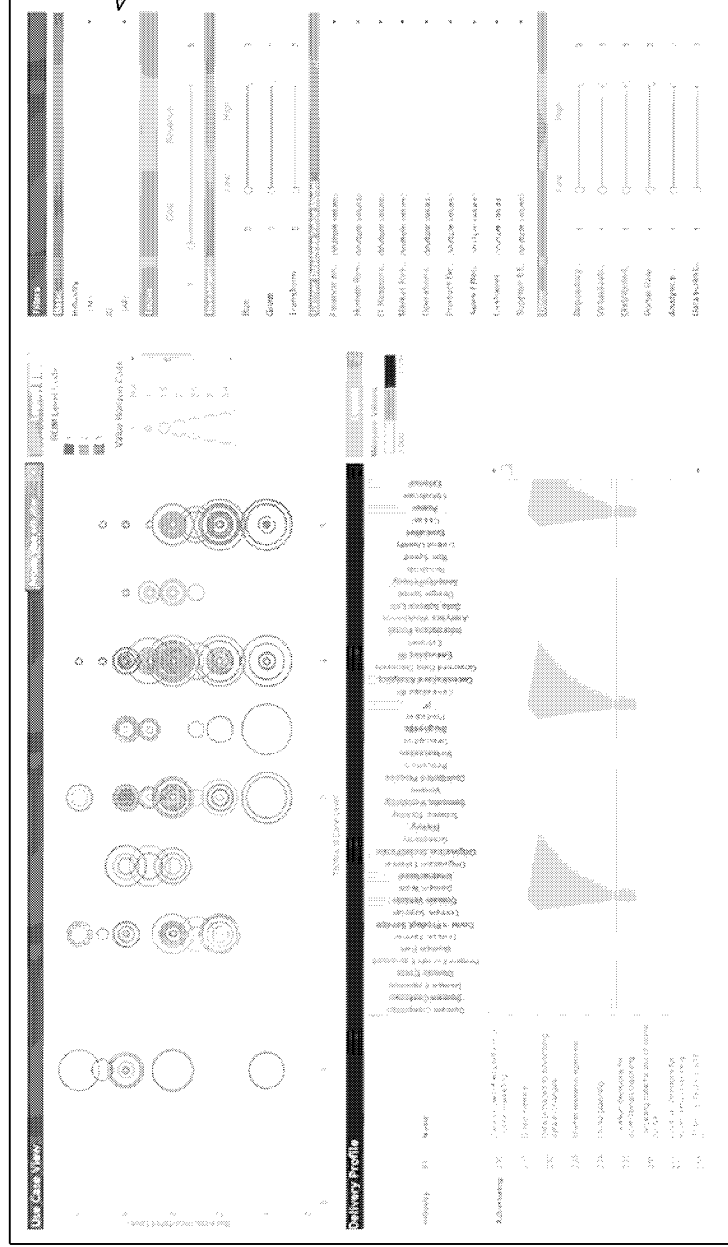
## RCMP's Maturity Score: 2.0

### Maturity Level 2: Opportunistic

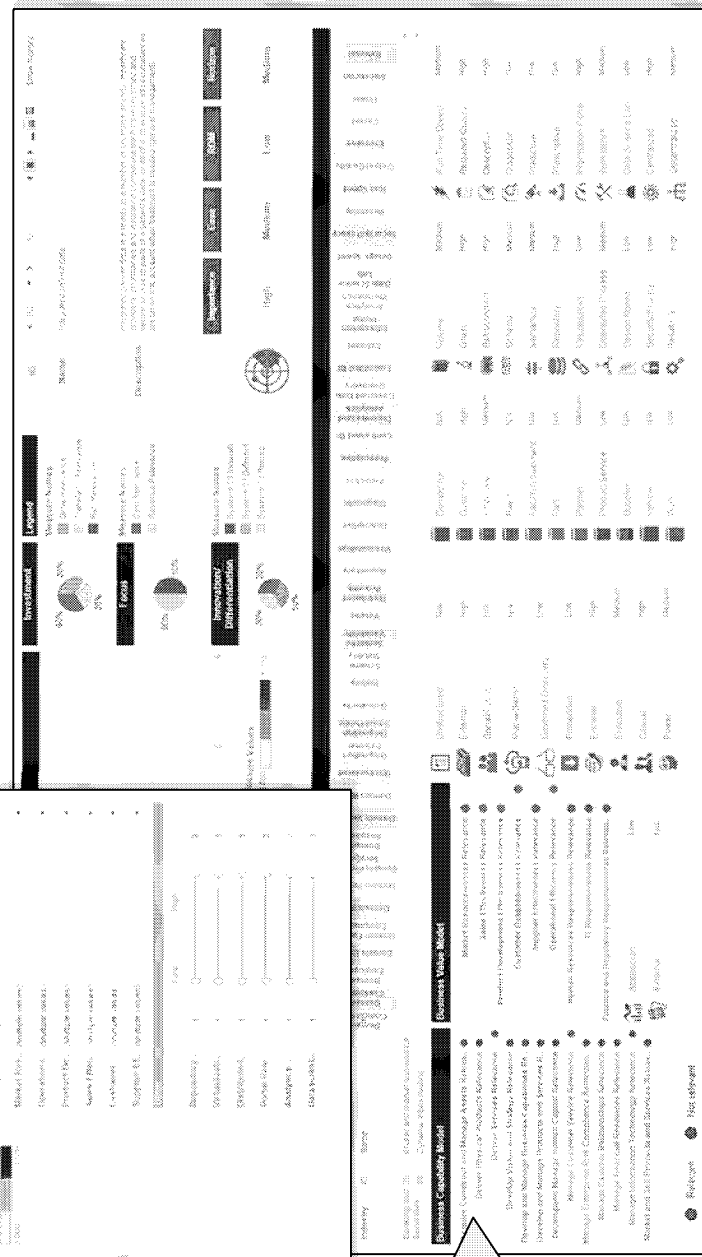


- RCMP has limited alignment of data and analytics initiative performance metrics and data quality metrics to the strategic business objectives metrics.
- The lack of effective information governance and clear roles and responsibilities impede RCMP's ability to work effectively across organizational barriers and information silos.
- The lack of availability of quality metrics limits RCMP's ability to institute an effective continuous improvement program.
- "If you can't measure it, you can't manage it", RCMP doesn't track most of the key metrics for data management and analytics to improve the outcome quality and process efficiency.
- It is struggling to provide flexible and agile analytics support to solve new business problems under traditional, rigid IT infrastructure and processes.

# Gartner's Analytic Capability Explorer (ACE) was used to identify suitable Business Use Cases for RCMP to take a business priority driven perspective



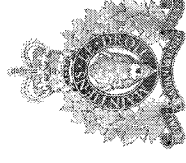
Ability to filter and select from more than 700 detailed industry and function based examples



Has detailed information on each use case including: Business Value Metrics (BVM), Business Capability Model (BCM), ease of implementation, pace layers, cost vs. risk impact



# **Data and Analytics Strategy and Roadmap Analytics Vision and Strategy, Future State Design**



May 2018

Prepared for: RCMP

Project : 330044776

GARTNER CONSULTING

**Gartner®**

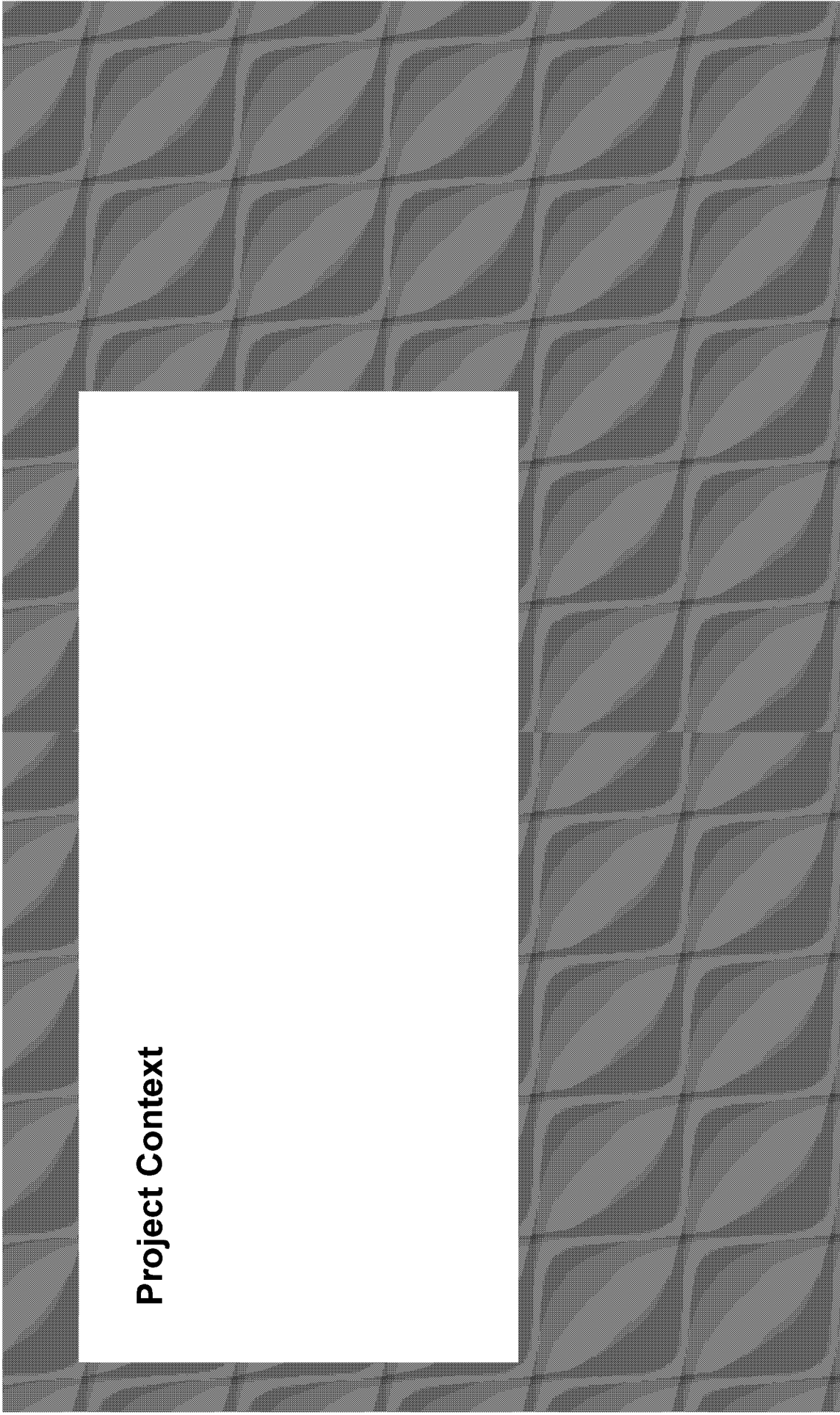
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## Agenda

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- Project Context
- Data and Analytics Vision and Strategy
  - Key components of Vision Statement
  - Use Cases aligning with Vision Objectives
  - Strategic Goals
  - Guiding Principles for Strategic Goals
  - A Combined Vision Objectives and Strategic Goals
  - Analytics Vision and Strategy supporting the RCMP Business Goals
- Future State Design
  - Bimodal and Federated Model
  - Metrics
  - Data Governance
  - People
  - Processes
  - Technology
- Appendix A Governance Artifacts and Processes

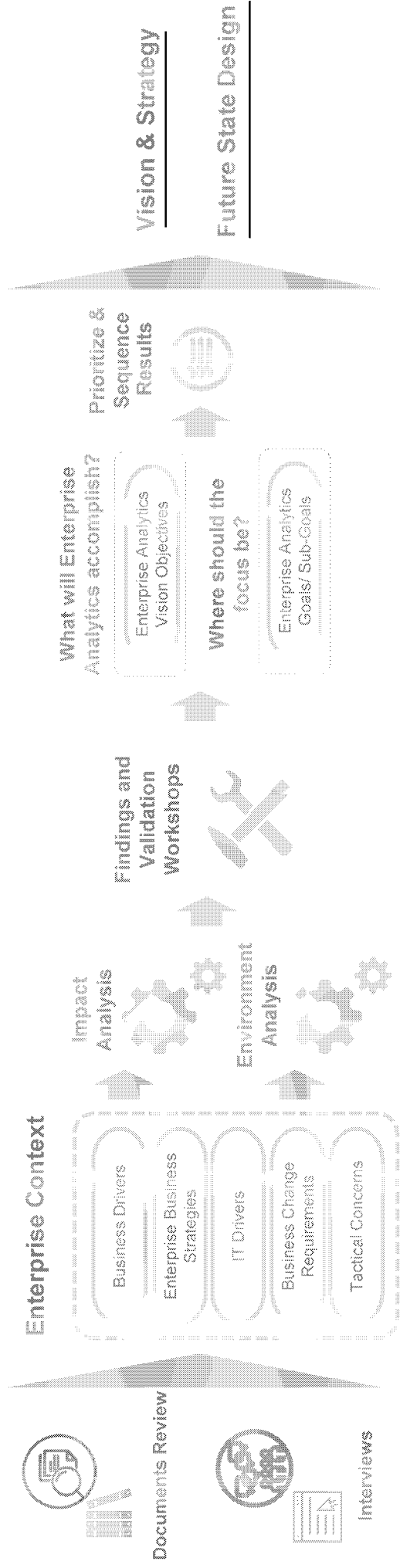


## Project Context



## Engagement Progress and Development Approach

- Gartner reviewed RCMP documents and conducted interviews across RCMP to understand the current data and analytics environment
- The Current State Workshop validated our perspective on RCMP culture, vision, strategic priorities and data governance. This helped to inform the development of goals for enterprise analytics and define priorities to move forward
- This document articulates the results of this process which include: Analytics Vision and Strategy, Future State Design and Roadmap Implementation Plan



# **Data and Analytics Vision**

Why is a Vision required?

Proposed Vision Statement and Objectives

Section Purpose

---

## Why does RCMP need a Data and Analytics Vision?

---

**The Vision describes what the Data and Analytics program looks like, why it is needed, and how it supports the business vision.**

The Analytics Vision serves two critical functions for the program:

- **Communication Instrument:** Articulates the overall intent and focus of Analytics in business terms, builds broad awareness among stakeholders and sets expectations (What value are we going to provide? For whom?). This is the purpose of the **Vision Statement**.
- **Strategic Alignment:** Defines the target business value that will be achieved through Analytics investment (capital and ongoing), explicitly links Analytics outcomes to overarching business strategy and serves as the high level business case for all derivative Data & Analytics investment. This is the purpose of the **Vision Objectives**.

## Gartner Proposes the Following Data and Analytics Vision Statement

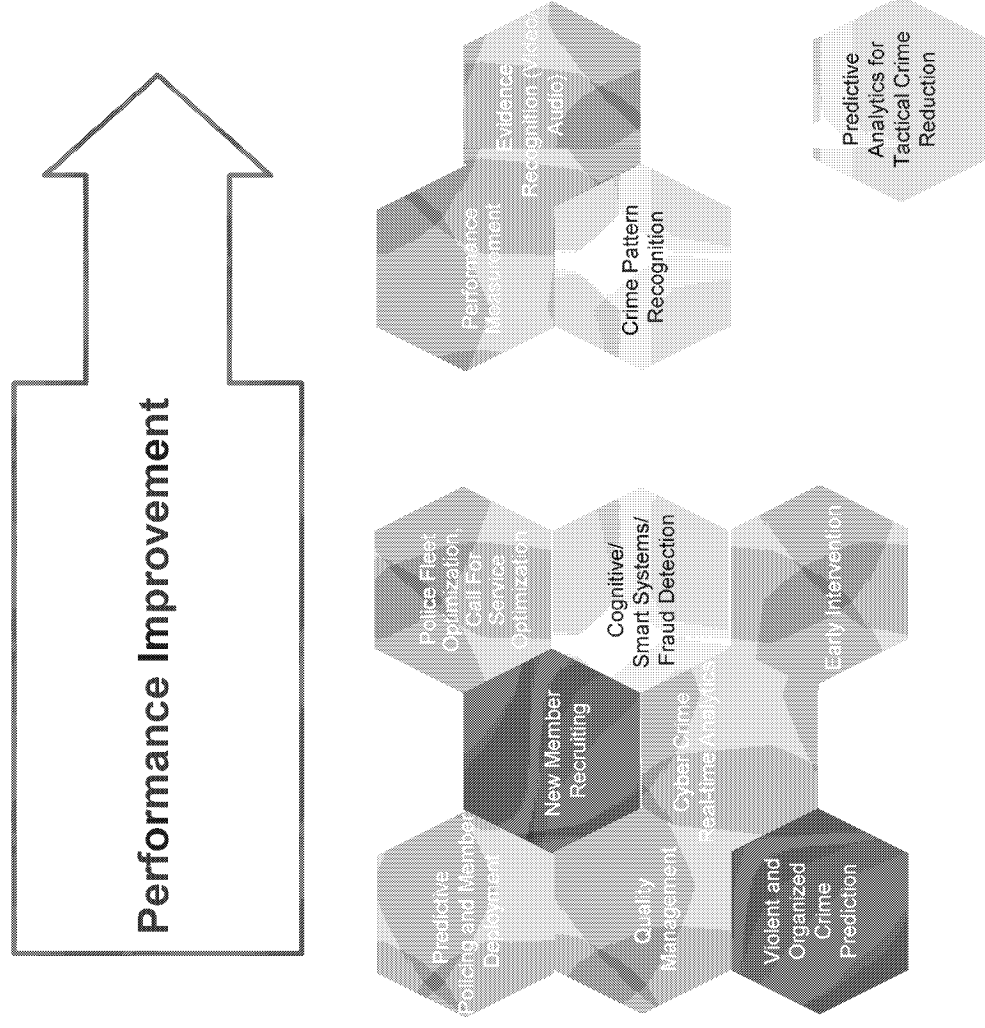
The following statement articulates and communicates the overarching vision for RCMP Data and Analytics program:

*To provide a secure and safe environment for Canadians by enabling the effective consumption of data leading to performance improvement, operational excellence, innovation in technology and evidence based decision making*

This vision statement has four key components:

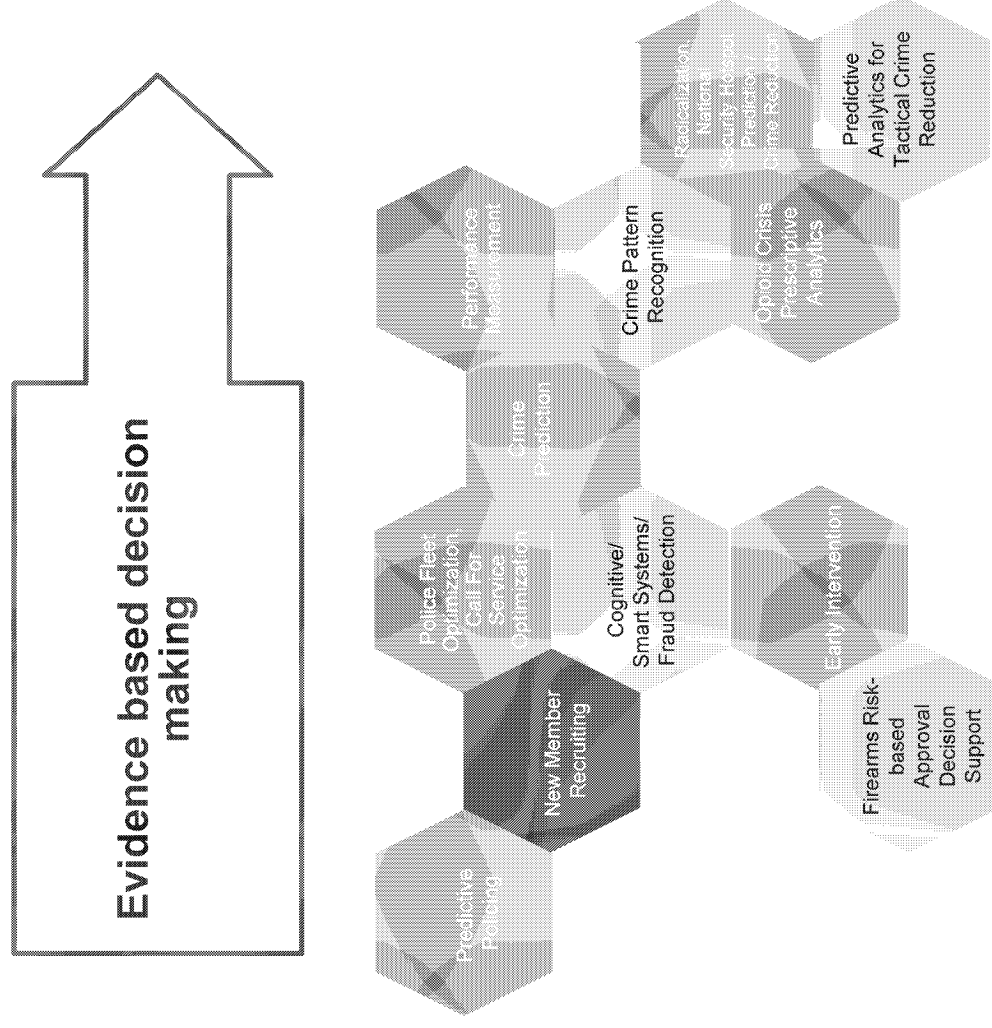
- **Performance Improvement:** The goal of the analytics program should be to enable the broad use of data and analytics to continuously drive optimal performance within each business line and to leverage analytics to deliver a consistent, positive experience for partners and public to enable them to interact in more meaningful and valuable ways.
- **Evidence-based Decision Making:** Enable evidence-based and real-time decision-making in critical areas across RCMP.
- **Data Accessibility:** Enable data accessibility such that all users of data have access to the right information at the right time for data-driven decision making.
- **Innovation:** Leverage technology and innovation to deliver results that are reflective of a modern professional police force.

## Each Vision Objective Includes Specific Outcomes that will be Enabled by the Data and Analytics Strategy and Roadmap



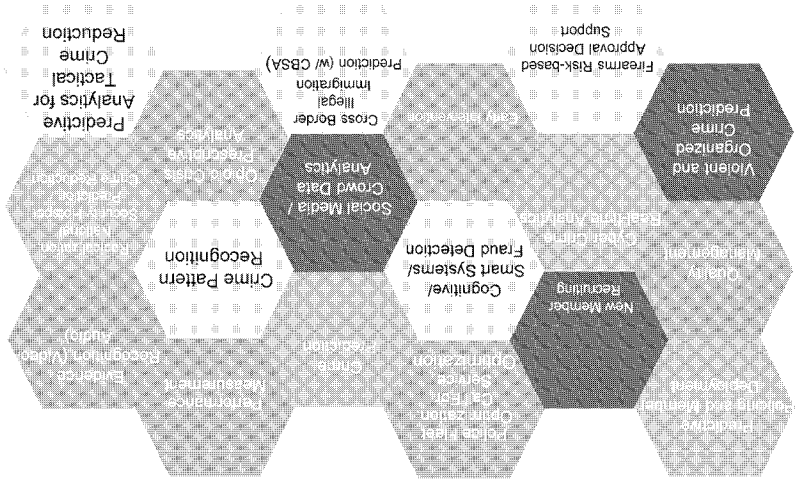
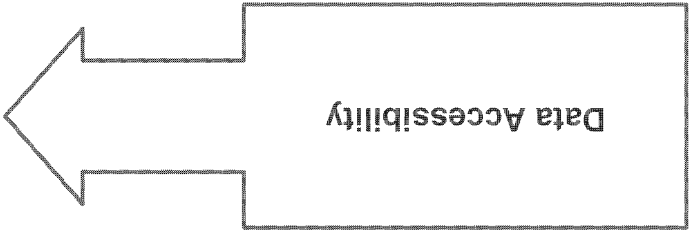
- Be able to efficiently track criminal activities and act proactively
- To be able to analyze and identify patterns in unstructured data like mass surveillance videos and images to identify criminal patterns
- To be able to predict location of crime before it happens by use of forward looking analysis
- To be able to measure officer's training investment through value it produces for e.g. decline in crime rate
- To identify personalities within RCMP that are likely to demonstrate social problems by tracking their behavior and raising red flags for proper counseling
- To be able to calculate time required for call to service and make operational decisions

## Each Vision Objective Includes Specific Outcomes that will be Enabled by the Data and Analytics Strategy and Roadmap



- Police deployment strategy based on data driven analysis which will help them focus on the places, problems, times and situations that contribute most to crime
- Use of social media analysis to predict crimes and allocate resources according to risk profile
- Data can be used to calculate the risks associated with particular individuals who are known offenders
- Social media analysis to understand general public sentiment towards RCMP
- Use of social media for officers in field to understand public sentiments within certain radius so that a situation could be diffused

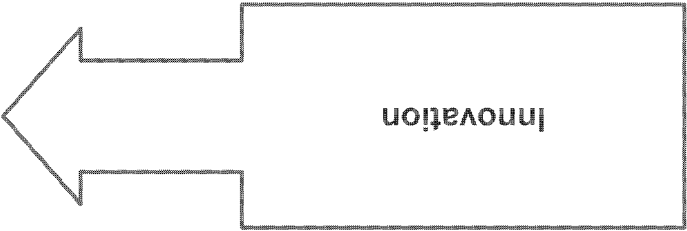
Each Vision Objective Includes Specific Outcomes that will be Enabled by the Data and Analytics Strategy and Roadmap



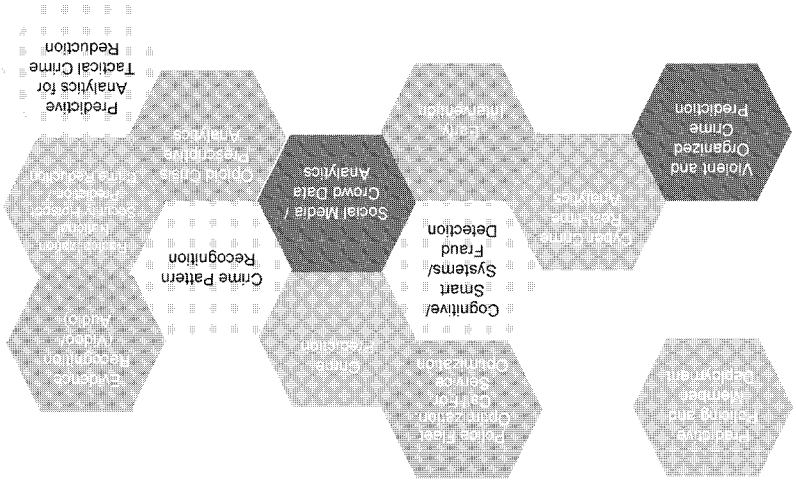
- Pushing data to officers in fields for instant access and quick decision making
- Availability of reference data to empower end users for e.g. per capita of officers, physical locations data, number of incidences responded to last year etc.
- Accessibility of partner data to give transparency to contract policing e.g. how many police officers partners paid for and how many were assigned to the municipality
- Data availability to municipalities to enable them to carry out benchmarking analysis e.g. comparison with other municipalities



Each Vision Objective Includes Specific Outcomes that will be Enabled by the Data and Analytics Strategy and Roadmap



- Using live and automated predictive crime mapping tool to identify hotspots on the basis of recorded crimes and phone calls
- Providing smart phones and tablets to police officers to enable them to work on the move



## **Data and Analytics Strategy**

Why is a Strategy required?

Proposed Analytics Goals and Sub-Goals  
Proposed Analytics Guiding Principles

## Why does RCMP need a Data and Analytics Strategy?

The Strategy synchronizes Analytics activities with the desired Business Outcomes

The Strategy serves two critical functions for the program:

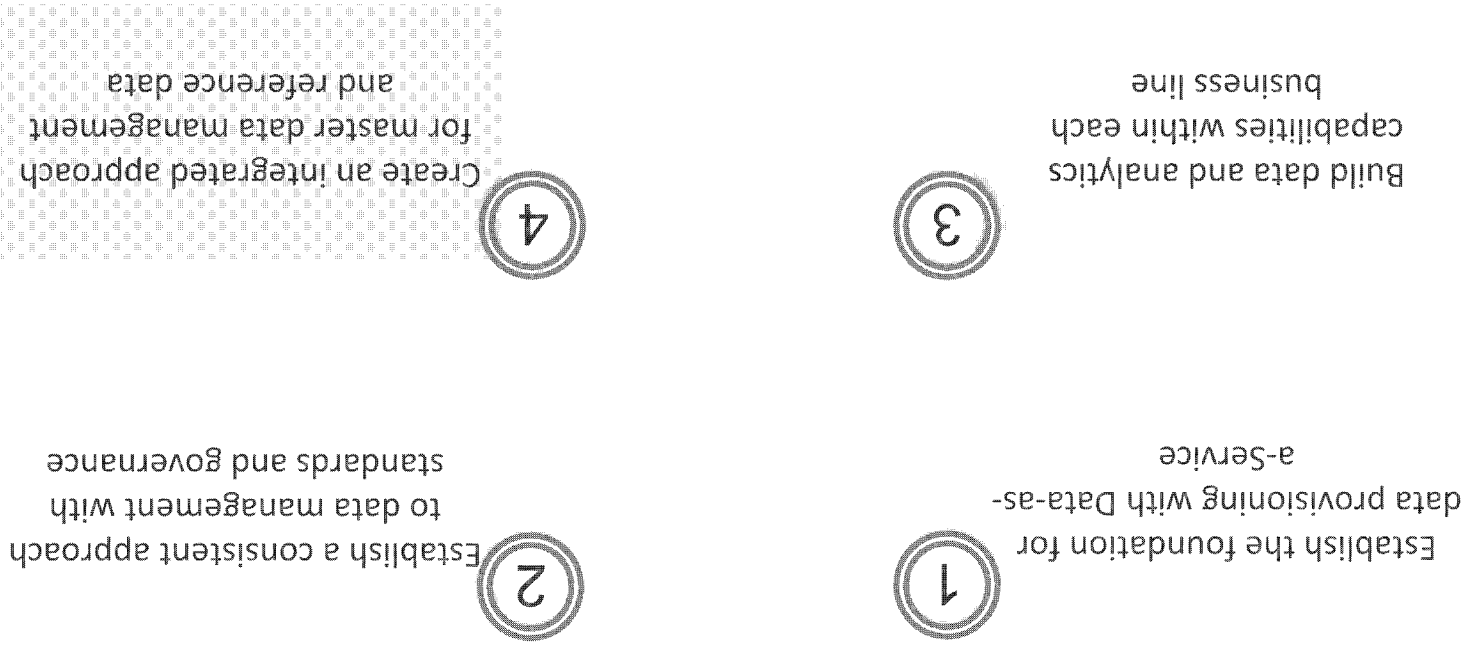
- **Communication Instrument:** Like the Vision, it articulates how the Analytics capabilities will come together to enable RCMP to achieve their business objectives (What capabilities are required? How will they support achieving business objectives?). This is the purpose of the Strategy Goals

- **Outlines a Plan:** Through the Strategic Goals and sub-goals, the Strategy breaks down into initiatives / projects that are prioritized, and taken together to create the Analytics program. This is the purpose of the Implementation Roadmap

To aid the overall development of the Strategy, Guiding Principles act as “guardrails” for the plan:

- **Guiding Principles** will be used to guide program design and operational decision-making in the near term, and as new analytics requirements and demands emerge in the future

Proposed Strategic Goals: What Data and Analytics will do to enable the Vision Objectives





Establish the foundation for data provisioning with Data-as-a-Service

Strategy

| Strategic Characteristics  |                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Business Value</b>      | <ul style="list-style-type: none"><li>▪ Foundational</li><li>▪ Standardization and Reuse</li></ul>                                                                                                                                                                                                                                                                  |
| <b>Strategic Sub-goals</b> | <ul style="list-style-type: none"><li>▪ Improve data search and accessibility</li><li>▪ Foster practitioner collaboration</li><li>▪ Improve data tagging</li><li>▪ Improve provisioning of data for business</li></ul>                                                                                                                                              |
| Target State Implications  |                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Operating Model</b>     | <p><i>Business Role</i></p> <ul style="list-style-type: none"><li>▪ Data Standardization</li><li>▪ Data Access Roles</li><li>▪ Data Governance Committee</li><li>▪ Demand modelling</li></ul> <p><i>Enablement Mechanisms</i></p> <ul style="list-style-type: none"><li>▪ Master Data Management</li><li>▪ Information Portal</li></ul>                             |
| <b>Technology Model</b>    | <p><i>IT Role</i></p> <ul style="list-style-type: none"><li>▪ Metadata Manager</li><li>▪ Data Profiling</li></ul> <p><i>Enablement Mechanisms</i></p> <ul style="list-style-type: none"><li>▪ Data Modeling</li><li>▪ Terminology Standardization</li><li>▪ Metadata Management</li><li>▪ Semantic Layer</li><li>▪ Data Source Connectivity / Maintenance</li></ul> |



Establish a consistent approach to data management with standards and governance

Strategy

| Strategic Characteristics  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Business Value</b>      | <ul style="list-style-type: none"><li>▪ Operational Efficiency</li><li>▪ Agility and Flexibility</li></ul>                                                                                                                                                                                                                                                                                                                                                        |
| <b>Strategic Sub-goals</b> | <ul style="list-style-type: none"><li>▪ Deploy formal and repeatable processes for data management and data governance</li><li>▪ Enable broad information and processes linkages</li><li>▪ Monitor, coordinate and plan across enterprise</li><li>▪ Establish data accessibility</li><li>▪ Identification of enterprise data assets</li></ul>                                                                                                                     |
| Target State Implications  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Operating Model</b>     | <div><div><ul style="list-style-type: none"><li>▪ Business Role</li><li>▪ Cross-functional Steering Committee</li><li>▪ Data Model Creation and Management</li><li>▪ Standards</li><li>▪ Governance processes</li><li>▪ Tools Standards</li></ul></div><div><ul style="list-style-type: none"><li>▪ Project Governance</li><li>▪ Common Data Terminology / Dictionary/Tagging</li><li>▪ Standard Reporting</li></ul></div></div> <div>Enableness Mechanisms</div> |
| <b>Technology Model</b>    | <div><div><ul style="list-style-type: none"><li>▪ IT Role</li><li>▪ Enterprise Sponsorship / Enablement</li><li>▪ Enterprise Architect</li></ul></div><div><ul style="list-style-type: none"><li>▪ Implementation Infrastructure</li></ul></div></div> <div>Enableness Mechanisms</div>                                                                                                                                                                           |



Build data and analytics capabilities within each business line

Strategy

| Strategic Characteristics  |                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Business Value</b>      | <ul style="list-style-type: none"><li>▪ Adoption</li><li>▪ Evidence-based decision making</li><li>▪ Agility</li></ul>                                                                                                                                                                                                                                                                      |
| <b>Strategic Sub-goals</b> | <ul style="list-style-type: none"><li>▪ Organization wide change to data driven decision making</li><li>▪ Enable decision models</li><li>▪ Efficient use of analytics</li><li>▪ Foster collaboration between IT and Business</li><li>▪ Self service analytics capabilities</li></ul>                                                                                                       |
| Target State Implications  |                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Operating Model</b>     | <div><div><ul style="list-style-type: none"><li>▪ Business Role</li><li>▪ Data Standardization</li><li>▪ Data Analyst</li><li>▪ Data Scientist</li></ul></div><div><ul style="list-style-type: none"><li>▪ Common Data Terminology / Dictionary / Tagging</li><li>▪ Data Literacy Workshops and Training Session</li><li>▪ Guidelines to govern people and processes</li></ul></div></div> |
| <b>Technology Model</b>    | <div><div><ul style="list-style-type: none"><li>▪ IT Role</li><li>▪ Technology training</li><li>▪ Metadata Manager</li></ul></div><div><ul style="list-style-type: none"><li>▪ Data Catalog</li><li>▪ Data Maintenance and Cleansing</li><li>▪ Data-as-a-Service</li></ul></div></div>                                                                                                     |



Create an integrated approach for master data management and reference data

| Strategic Characteristics        |                                                                                                                                                                                                                                                                                                               |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Business Value</b>            | <ul style="list-style-type: none"><li>▪ Data curation</li><li>▪ Continuous improvement of data value</li><li>▪ Consistent analysis across organization</li></ul>                                                                                                                                              |
|                                  | <b>Strategic Sub-goals</b>                                                                                                                                                                                                                                                                                    |
|                                  | <ul style="list-style-type: none"><li>▪ Centralized master data and reference data management</li><li>▪ Data stewardship</li><li>▪ Analytics governance</li></ul>                                                                                                                                             |
| <b>Target State Implications</b> |                                                                                                                                                                                                                                                                                                               |
| <b>Operating Model</b>           | <b>Business Role</b> <ul style="list-style-type: none"><li>▪ Chief data officer</li><li>▪ Data governance lead</li><li>▪ IT governance</li></ul>                                                                                                                                                              |
| <b>Technology Model</b>          | <b>IT Role</b> <ul style="list-style-type: none"><li>▪ Enterprise Architect</li></ul> <b>Enablement Mechanisms</b> <ul style="list-style-type: none"><li>▪ Data governance tools</li><li>▪ Data quality tools</li><li>▪ Data management tools</li><li>▪ LDW</li><li>▪ Implementation Infrastructure</li></ul> |



## Why RCMF needs Data and Analytics Guiding Principles

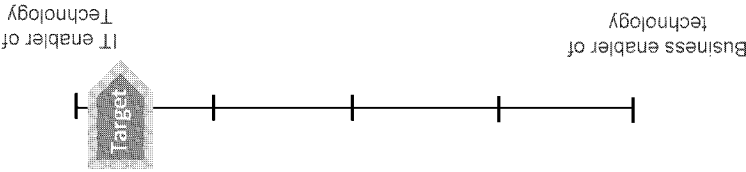
Guiding principles serve as "strategic guardrails" for decision making and are intended to foster model behaviors across the organization for Analytics

- The guiding principles can help RCMF build a sustainable foundation for analytics
- Best in class organizations adapt the guiding principles to help guide their strategy for analytics
- The guiding principles can change overtime and should be revisited every 12 months to ensure they remain relevant
- Subsequent slides articulate guiding principles for RCMF aligned to Strategic Goals
- These principles will also be applied to inform/design the target state models

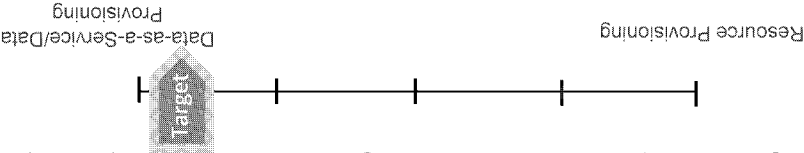
Gartner proposes the following guiding principles for the RCMP Data and Analytics program [1 of 4]

1 Establish the foundation for data provisioning with Data-as-a-Service

**Principle 1: IT Enablers of Technology.** We will enable technology through IT, so that business can meet its data and analytics requirements. IT will be responsible for setting standards for technology and delivering services to business to ensure is readily accessible and secure.



**Principle 2: Data Accessibility.** We will assure that data is provided as-a-service to the rest of the organization through IT. We will also ensure that the data assets being provisioned via Daas are well-documented and locatable, and that controls for data governance, security, privacy and data quality are well-embedded to mitigate risks (such as data licensing and data ownership risks).

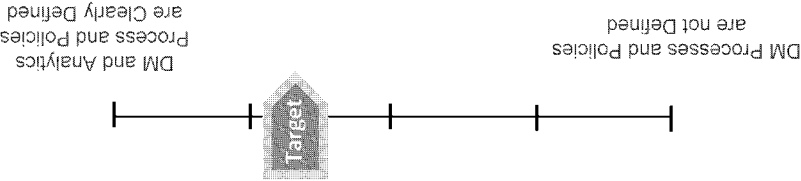


Gartner proposes the following guiding principles for the RCMP Data and Analytics program [2 of 4]

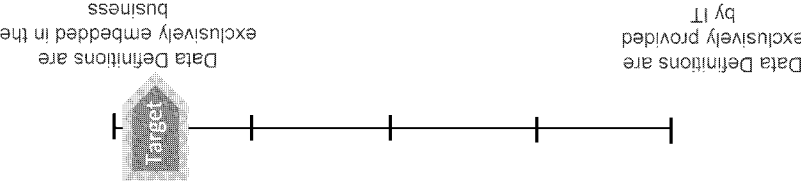
2

Establish a consistent approach to data management with standards and governance

**Principle 3: Defined Data Management (DM) Processes and Policies.** We will standardize processes and define clear policies for data management, project management framework, governance standards, technology selections standards, decision modelling standards and analytics governance standards across RCMP for consistency while allowing for the right degree of creativity and agility



**Principle 4: Data Definitions.** Data semantic definitions will be embedded in the Business and supported by the IT. Individuals that are closest to the data, understand its meaning and business implications are who should have responsibility and accountability for defining and maintaining it.

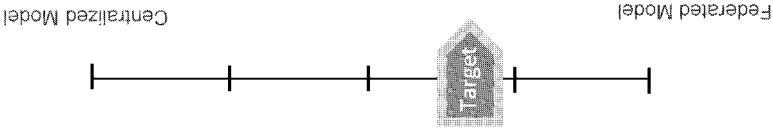


Gartner proposes the following guiding principles for the RCMP Data and Analytics program [3 of 4]

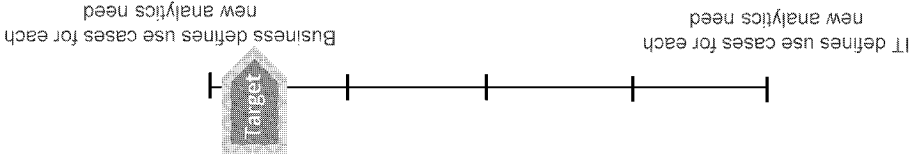
3

Build data and analytics capabilities within each business line

**Principle 5: Defining Roles and Responsibilities.** We will assure that BICC/ACE defines a blueprint for BI solution teams including roles, responsibilities, governance framework, processes for standardization whereas BI solution teams must manage and populate governance framework, roles, responsibilities and processes for self serving analytics capabilities.



**Principle 6: Business Involvement.** Business stakeholders will be engaged in defining business use cases for analytics need and IT will support this through stable infrastructure.

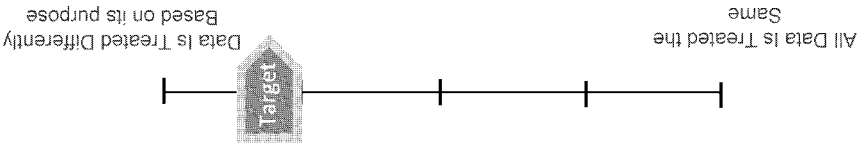


Gartner proposes the following guiding principles for the RCMF Data and Analytics program [4 of 4]

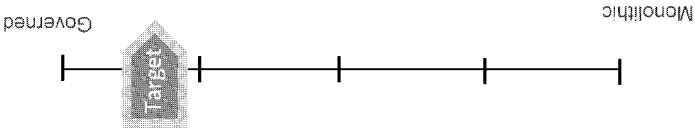
4

Create an integrated approach for master data management and reference data

**Principle 7: Data Curation.** Not all RCMF data will be treated equally; data will be treated, stored, disposed and managed based on business significance, stakeholder needs and applicable policy/regulation. The exception to this will be any requirements for Master Data or enterprise-wide use of Reference Data.



**Principle 8: Centralized Governance.** BICC/ACE will define and govern master data, reference data and analytics governance and processes for consistency of analysis rather than each line of business implementing its own governance and processes. The data quality governance will reside with decentralized BI Solution Teams.

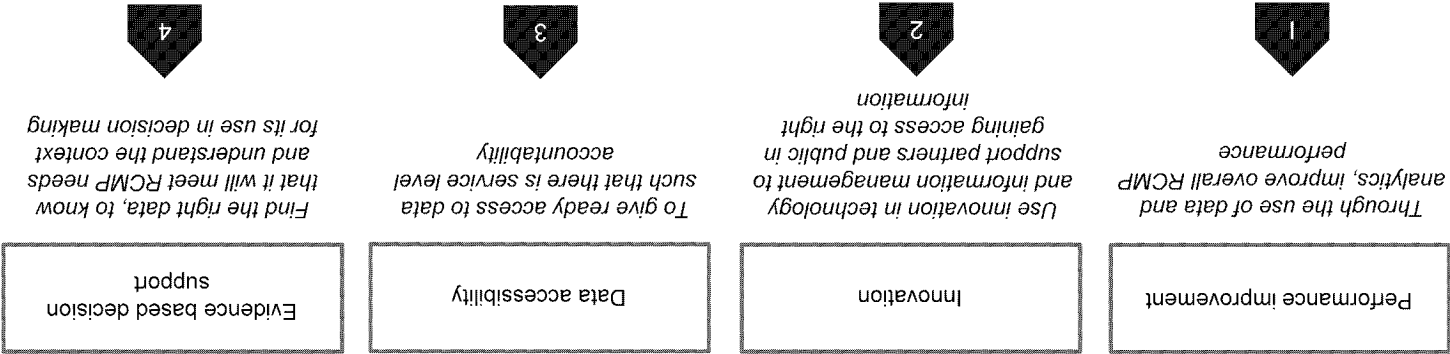
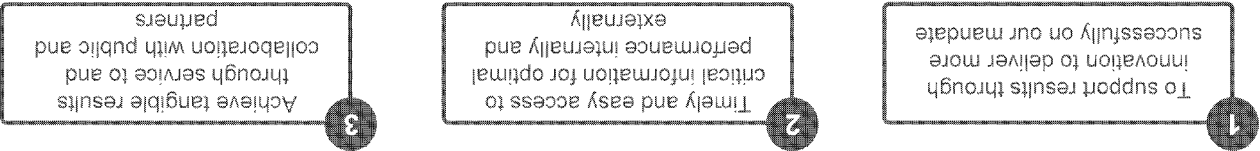


**A Combined Vision and Strategy**  
Aligning Strategy and Vision with Business  
Strategies

Vision Objectives and Strategic Alignment

- Analytics will focus on 4 key vision objectives in the near term, each of which support fundamental RCMP business strategies

Primary Royal Canadian Mounted Police Business Strategies



Through the use of data and analytics, improve overall RCMP performance

Use innovation in technology and information management to support partners and public in gaining access to the right information

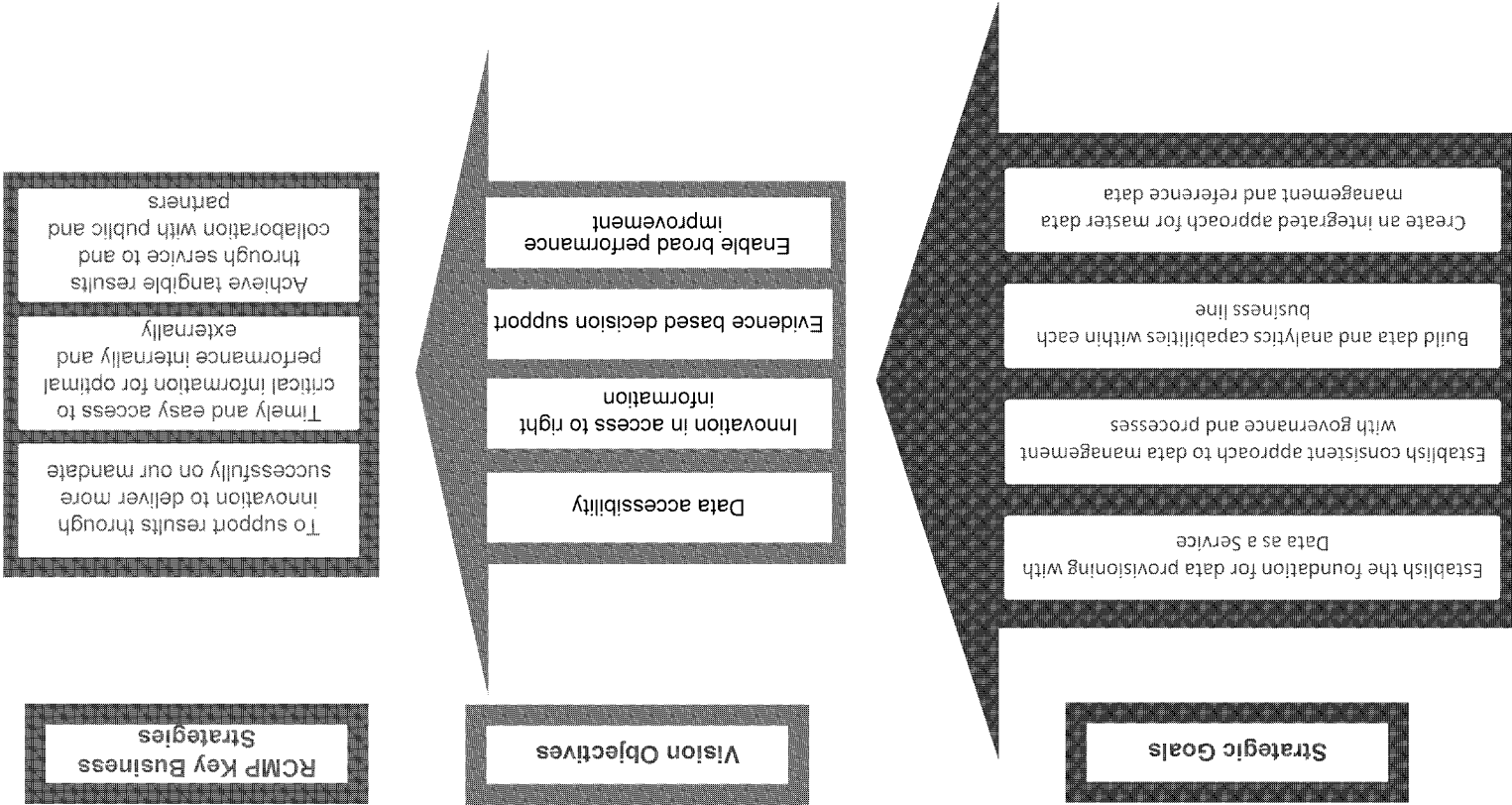
To give ready access to data such that there is service level accountability

Find the right data, to know that it will meet RCMP needs and understand the context for its use in decision making

Vision Objectives

RCMP Departmental Plan 2018-2019

# Strategy Map: How the Strategic Goals support the Vision Objectives and ultimately the RCMP Strategies



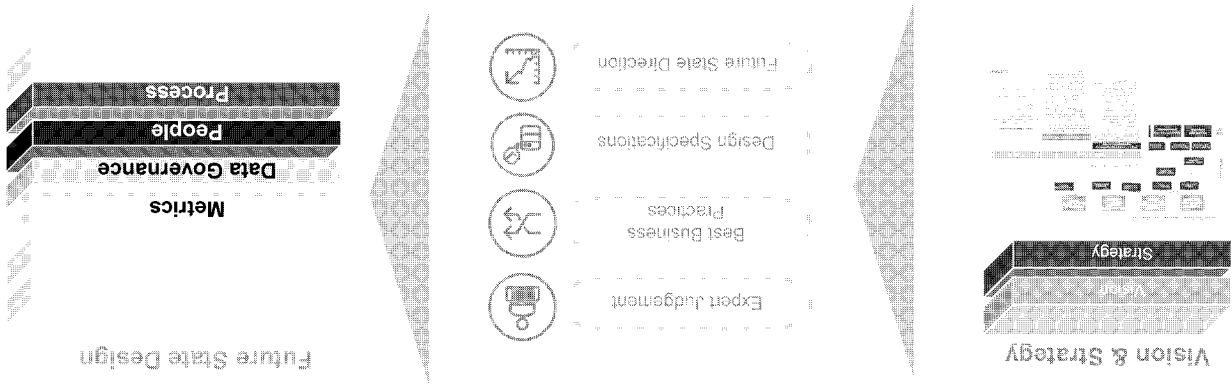


**Analytics Future State**

- Future State Design based on Bi-modal and Federated Models
- Future State Design of Metrics
- Future State Design of Data Governance
- Future State Design of People
- Future State Design of Process
- Future State Design of Technology

## Future State Development Approach

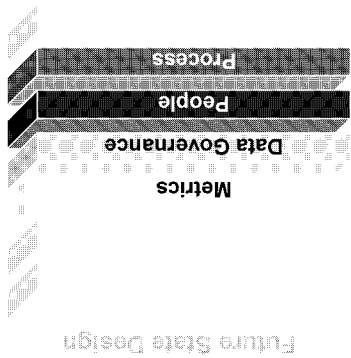
- The creation of the Future State Design for an RCMF Analytics capability builds off the preceding components:
  - The understanding Gartner developed in the Current State analysis and Maturity Assessment
  - The direction provided by the Vision and Strategy goals and objectives
  - The strategic Guiding Principles
  - The articulation of the Future State includes a view of governance, organization and roles, processes, and technology



Section Purpose

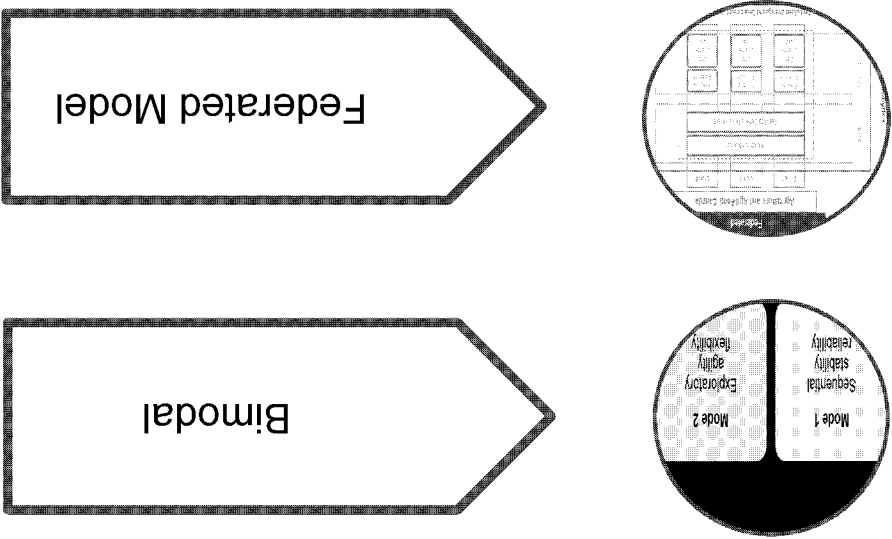
This section articulates the Future State Design for the RCMF Analytics program and serves as a communication instrument to articulate:

- The ultimate objective to be achieved in a reasonable, long term time frame (e.g. 3-4 years)
- The description is comprehensive, covering all aspects of organization and roles, governance and processes, and technology



- The following slides outline the final Future State Design for the RCMF Analytics capability.

Gartner advises that RCMF pursue a Bi-Modal Approach and a Federated Model to creating a Data and Analytics Capability



# The Future State Design of Data and Analytics requires a Bimodal Approach to balance the varying needs of the organization

Bimodal is the practice of managing two separate but coherent styles of work — one focused on predictability and the other on exploration.

**Mode 1** is predictable, improving and renovating in well-understood areas. Every organization has Mode 1 requirements or problems to solve. They plan and execute against it.

In **Mode 2**, business and IT together explore and experiment to innovate and solve new challenges. With digital business requiring organizations to be more innovative, agile and flexible, RCMP must invest in Mode 2 methods and processes as they seek to manage the increasingly uncertain business environment.

| Mode 1                                     | Mode 2                                |
|--------------------------------------------|---------------------------------------|
| Reliability                                | Agility                               |
| Waterfall                                  | Agile, Kanban                         |
| Plan driven, approval based                | Empirical, continuous, process- based |
| Enterprise suppliers, long term deals      | Small, new vendors, short term deals  |
| Good for conventional process and projects | Good for new and uncertain projects   |
| IT-centric removed from customer           | Business-centric close to customer    |
| Long (months)                              | Short (weeks, days)                   |





The Federated model for Analytics includes both Centralized (i.e., enterprise-focused) and De-centralized (i.e., functional-focused) Analytics delivery



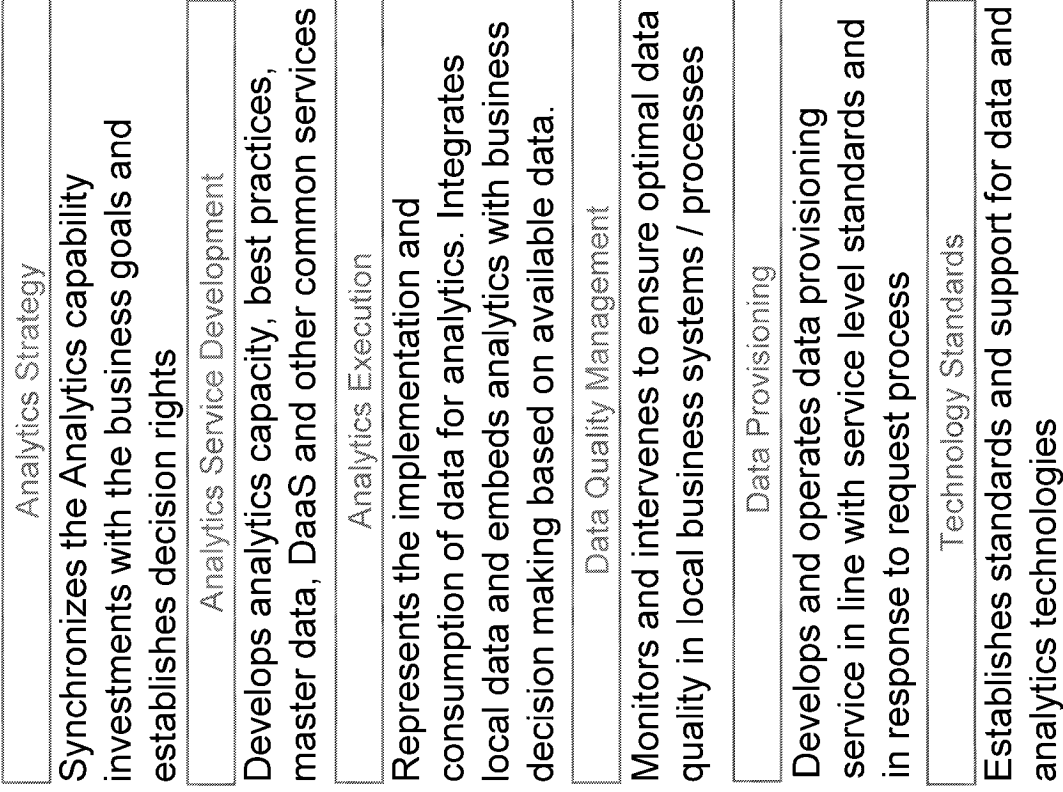
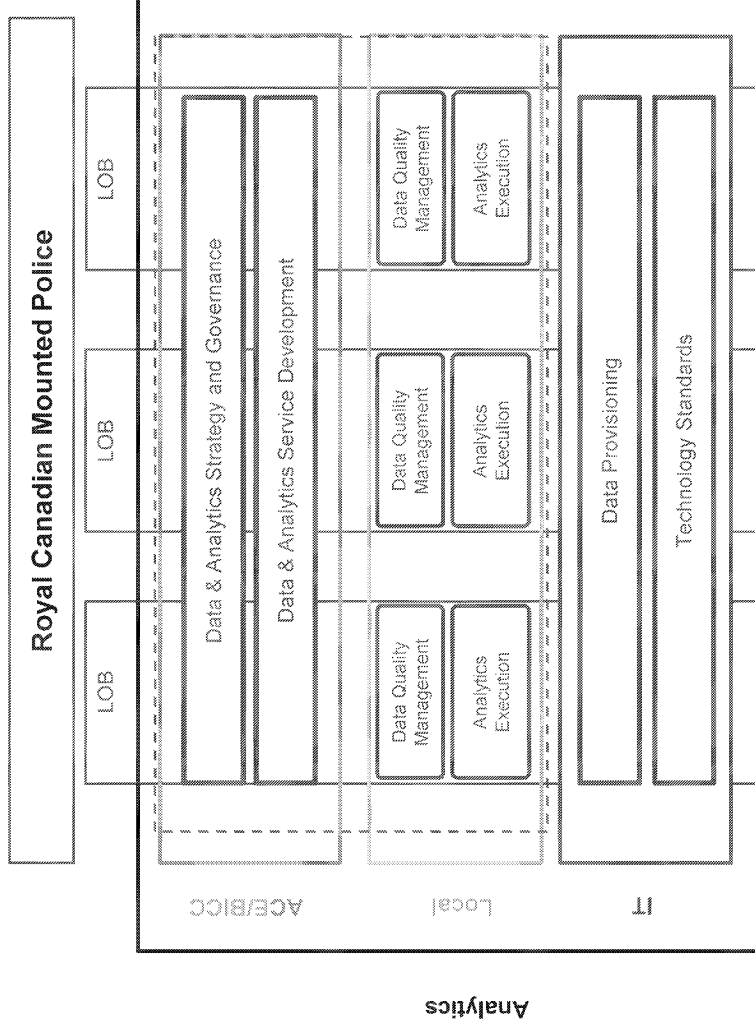
| Vision                                                                        |  |
|-------------------------------------------------------------------------------|--|
| Principles and Standards for Data and Analytics                               |  |
| Definition of Logical Data Layer (with the goal of enabling data integration) |  |
| Metrics                                                                       |  |
| Governance Framework                                                          |  |
| Master Data Management and Reference Data                                     |  |
| Analytics Centre of Expertise to promote adoption                             |  |

|                                                                                   |
|-----------------------------------------------------------------------------------|
| Line of Business Decisions Management and Models, Data and Analytics requirements |
| Building Capacity in the business                                                 |
| Populating the Governance Framework                                               |
| Data Stewardship Community                                                        |
| Local Data Integration using the common data Foundation                           |
| Analytics Tool                                                                    |



## Federated Operating Model for the RCMP

Complex organizations with diverse goals typically require an operating model and technology model that includes a high degree of Federation. RCMP is no exception. The recommended model balances the need for consistent and common approaches to shared standards and master data, with the need for agility and innovation in each line of business



## Section Purpose

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This section articulates the Future State Design for Analytics within RCMP which defines the Data Governance, People, Process and Technology components of the program that will be deployed to enable execution and achievement of the RCMP Vision and Strategy. The future state design includes:



**Metrics**

**Data Governance**

**People**

**Process**

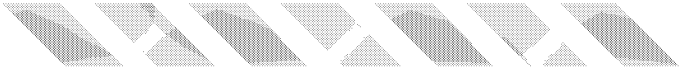
**Data Governance** – Establishes the decision rights framework and assigns roles and responsibilities.

**People** – Forms the groups and organizational structure to support the Data and Analytics

**Processes** – Sets up the processes to support data.

## Section Purpose

This section articulates the Future State Design for Analytics within RCMP which defines the Metrics component of the program that will be deployed to enable execution and achievement of the RCMP Vision and Strategy.



## Metrics

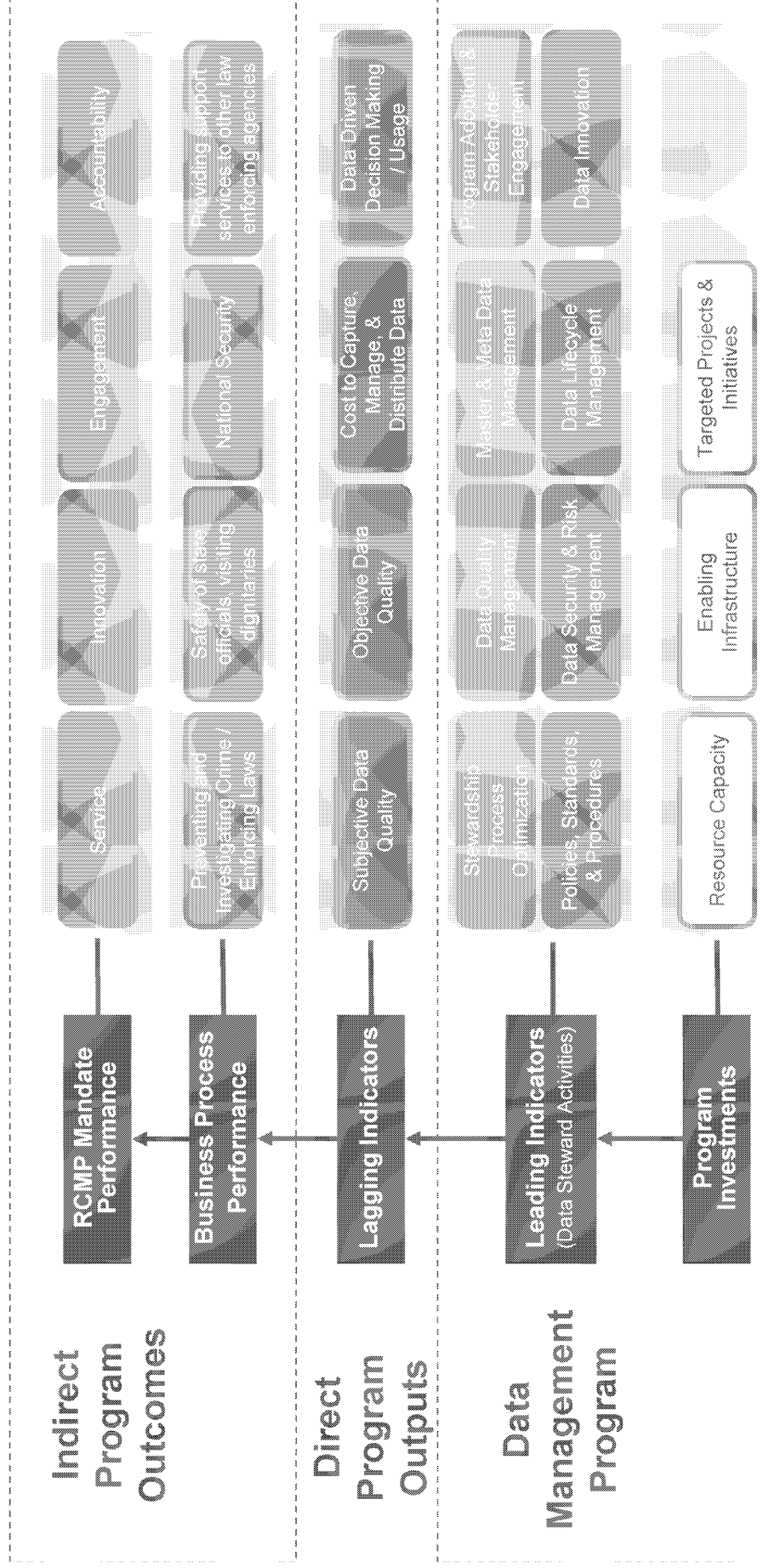
Captures how the progress and business contributions of analytics are measured

Data Governance – Establishes the decision rights

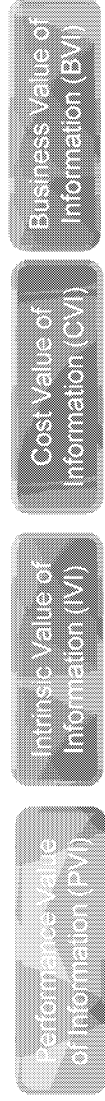
People – Form the groups and organizational structure to support the Data and Analytics.

Technology – Provides the technology capabilities to meet the Data and Analytics needs.

# Data and Analytics Metrics Causality Chain for RCMP



## Infonomic Data Valuation Areas:



## Sample Metrics for Data and Analytics Program

| Leading /<br>Lagging<br>Indicator | Category          | Sub-category                       | Metric Objective                                                                | Description                                                                                                                  | Metric                                                                                                                                          |
|-----------------------------------|-------------------|------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Leading Indicator                 | EDM Program       | Data & Analytics Capacity Building | Building data and analytics skills capacity within the organization             | Ensuring that data management material/artifacts are accessible and reach a broad audience                                   | Number of hits/visits on published EDM material such as policies, training resources, and guidelines (e.g. community of practice intranet site) |
| Lagging Indicator                 | EDM Program       | Data Governance                    | Compliance with issue resolution / escalation policies and processes            | Stewards escalate issues exceeding their personal scope to the broader data stewardship group or the data governance council | % of issues appropriately escalated by data stewards OR average time to resolution by issue type (from data steward issue log/ dashboard)       |
| Leading Indicator                 | EDM Program       | Data Lifecycle Management          | Reduce the retention/storage of unnecessary data                                | Assessment of the current state of data retention policy adherence                                                           | % coverage of data domains in scope of data retention /disposition / archiving standards                                                        |
| Leading Indicator                 | Data Quality      | Data Quality Improvement           | Process improvement                                                             | Identification of optimal approaches for resolving data quality or consistency issues to achieve targets                     | Number of recommendations proposed                                                                                                              |
| Lagging Indicator                 | EDM Program       | Strategy                           | Sufficient resources are assigned to implement EDM projects/activities          |                                                                                                                              | % of forecasted resources formally allocated to implement the EDM project/activity                                                              |
| Leading Indicator                 | Analytics Program | DaaS                               | Improve the effectiveness and efficiency of the DaaS in enabling business needs | Encourage appropriate use of the data-as-a-Service throughout the organization as a data and analytics enabler               | Number type, and source of requests received by IT (as per the Requests, Issues and Risks Collection process)                                   |
| Lagging Indicator                 | EDM Program       | Metadata Management                |                                                                                 | Progress of metadata management initiatives / activities                                                                     | % of sources being integrated with a metadata application                                                                                       |
| Lagging Indicator                 | Analytics Program | Metrics                            | Improve Data and Analytics program oversight and reporting                      | Identify improvements in the area of analytics program evaluation metrics                                                    | # of proposed recommendations for analytics metrics approved / implemented                                                                      |

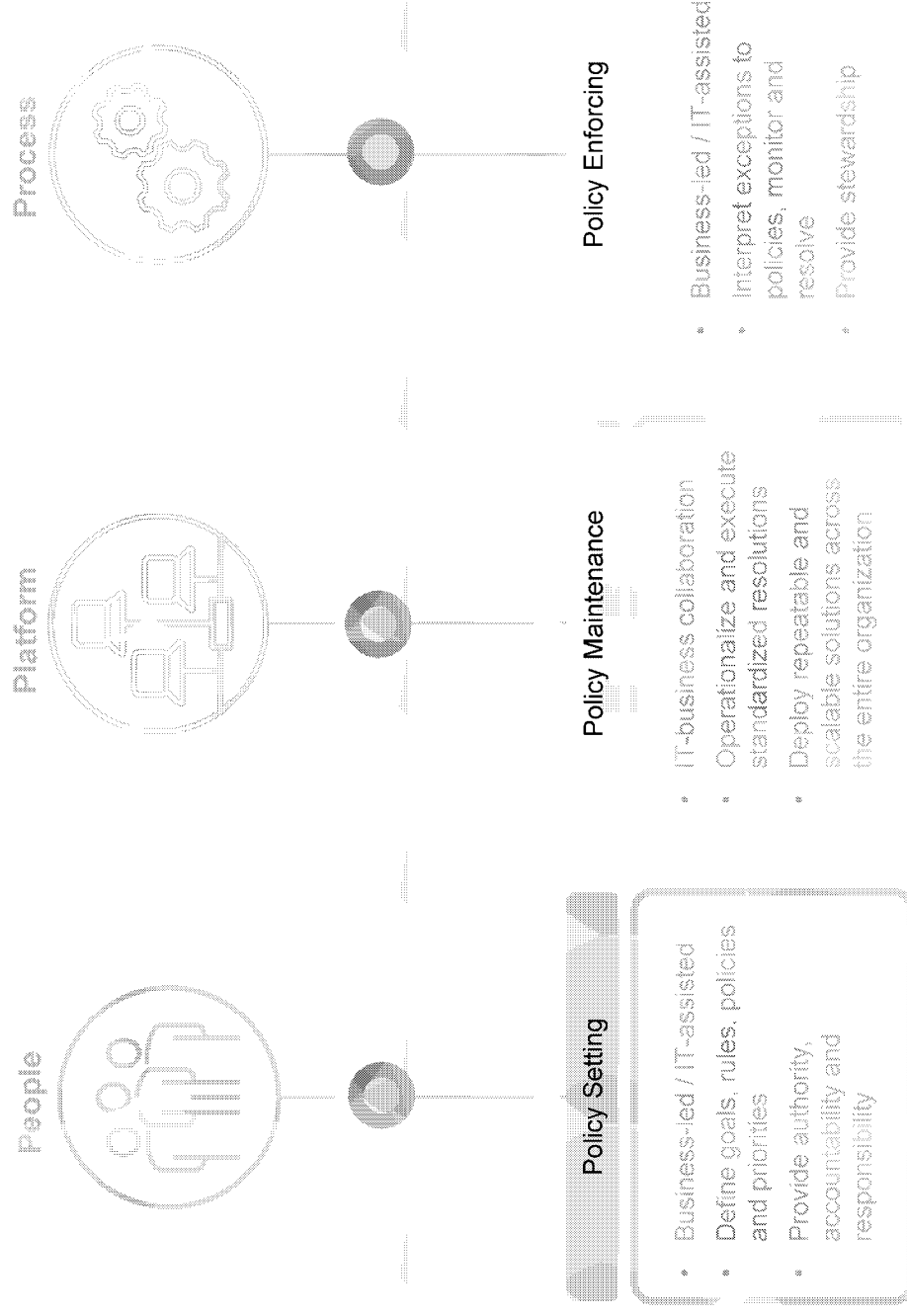
EDM= Enterprise Data Management

## Section Purpose

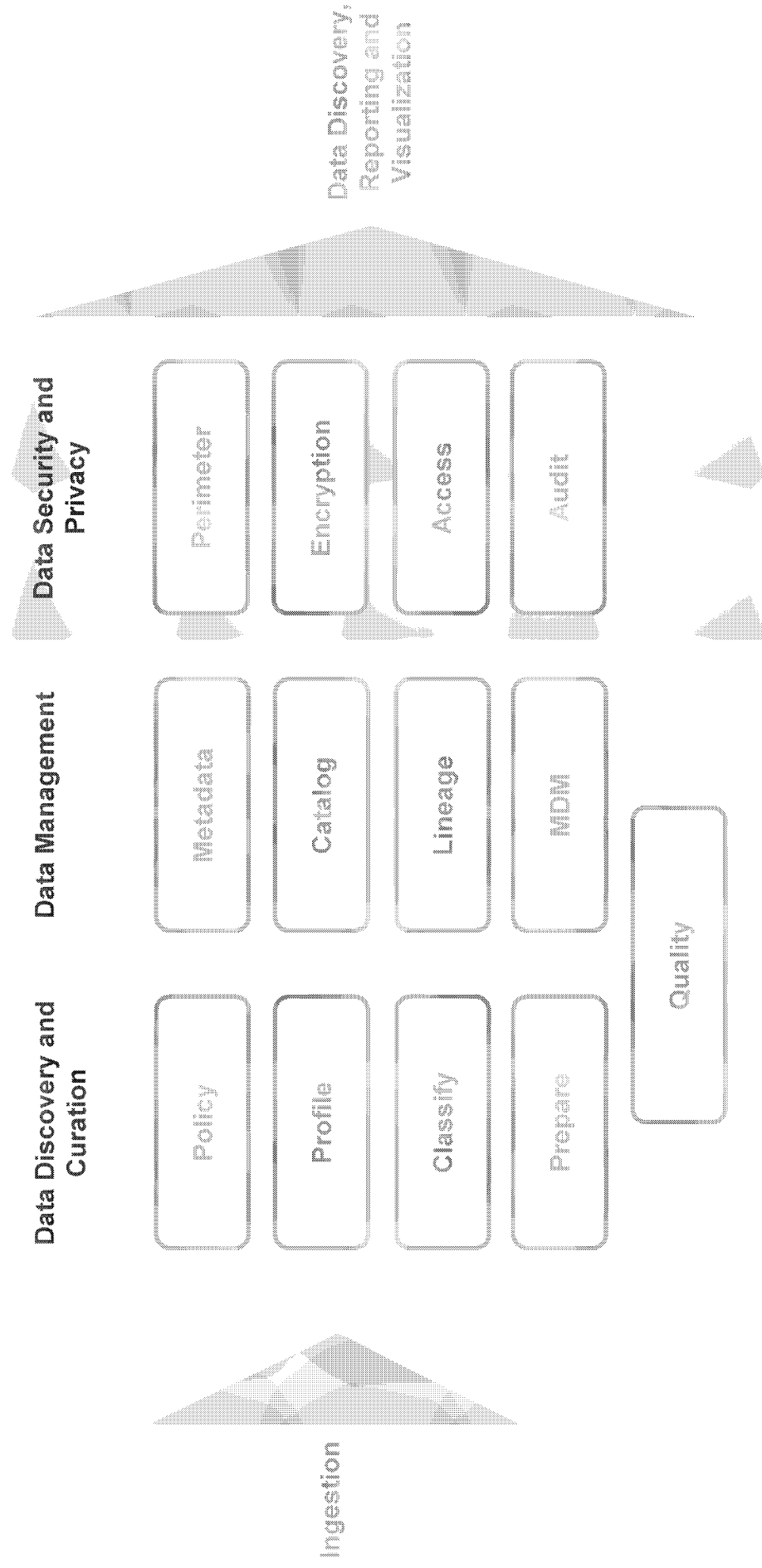
This section articulates the Future State Design for Analytics within RCMP which defines the Data Governance component of the program that will be deployed to enable execution and achievement of the RCMP Vision and Strategy.



## RCMP considers Data Governance as a Team Sport

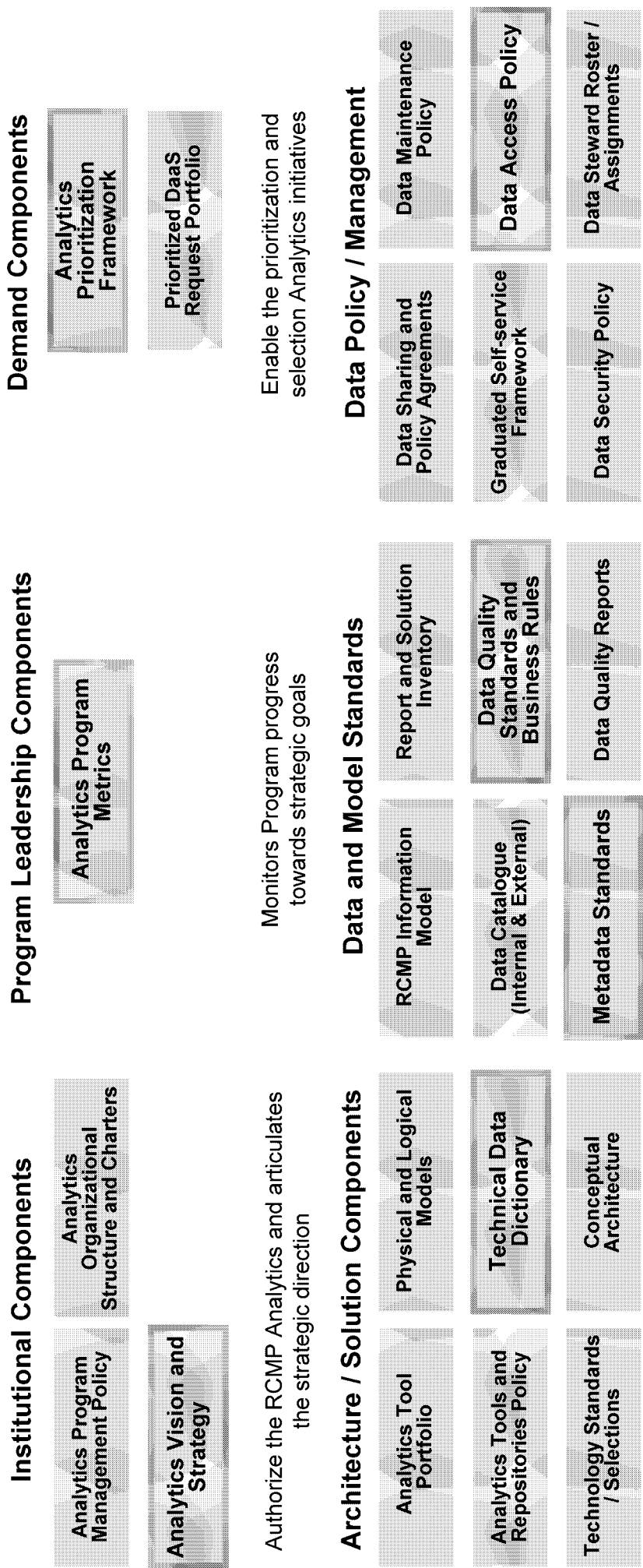


## Data Governance Framework





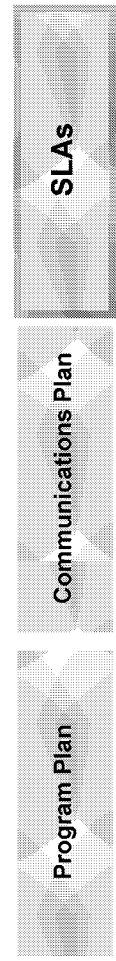
# Data Governance: The key data and analytics policies and governance artifacts required to 'operationalize' Analytics at the RCMP



Describe required architectures and technology selections, govern technical solution design, development and deployment

Capture outcomes of decisions about data definitions, structures and relationships

Govern how data should be managed, maintained, accessed, shared, etc. across RCMP

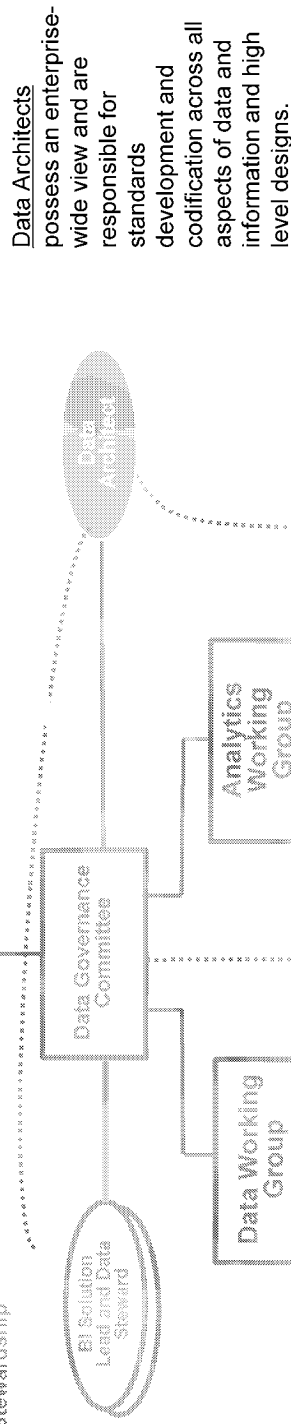


## Governance Groups and Roles in a Federated Model

Executive Sponsor champions the overall program and influences executive leadership on its behalf.

Data Governance Committee is the main working body, accountable for the selection and prioritization of initiatives, the definition of logical standards, and the approval and publication of all standards for data and analytics issues.

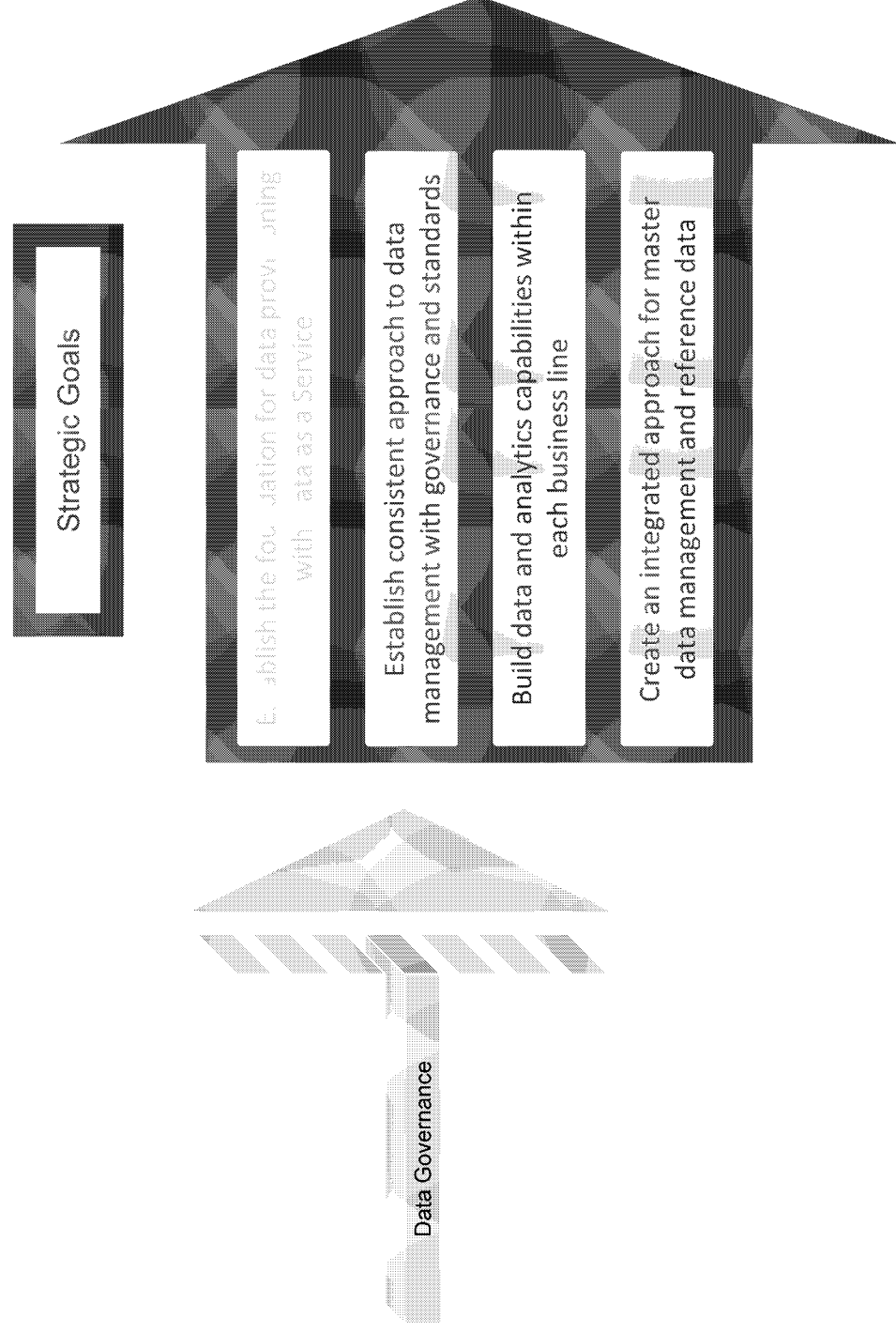
Stewardship



BI Solution Lead and Data Stewards are responsible for implementing and ensuring adherence to policies and standards. Stewards are typically business representatives with intimate familiarity and expertise of specific business processes and data.

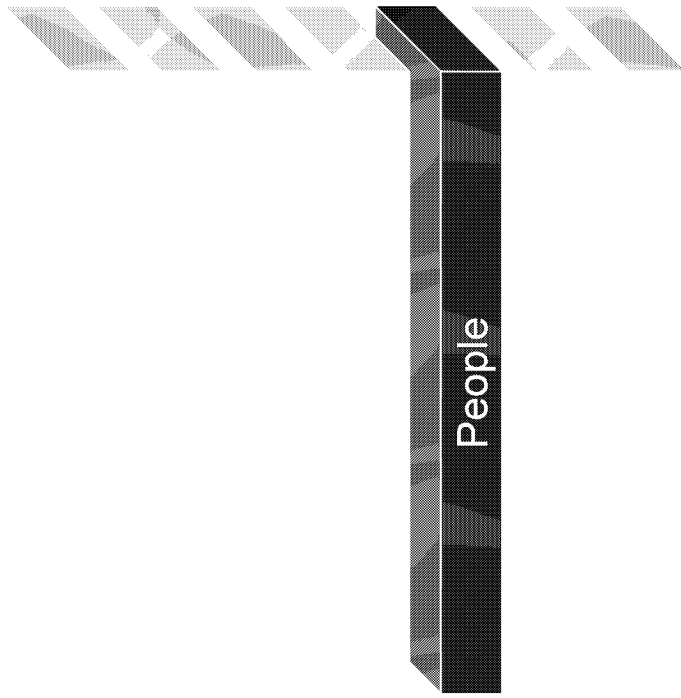
Integration with IT is responsible for delivering data-as-a-service to the business

## Setting up recommended Data Governance structure, policies and artifacts will enable Analytics strategic goals and vision objectives



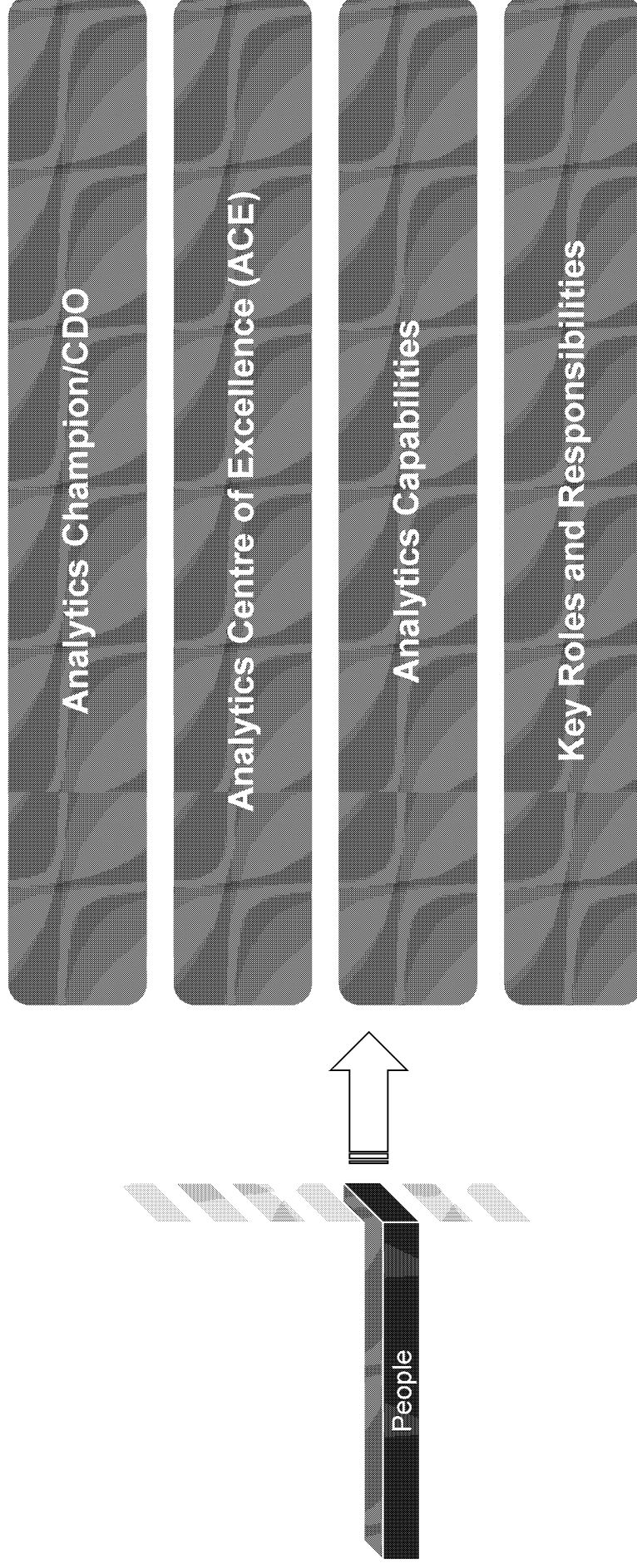
## Section Purpose

This section articulates the Future State Design for Analytics within RCMP which defines the Organization and Roles component of the program that will be deployed to enable execution and achievement of the RCMP Vision and Strategy.



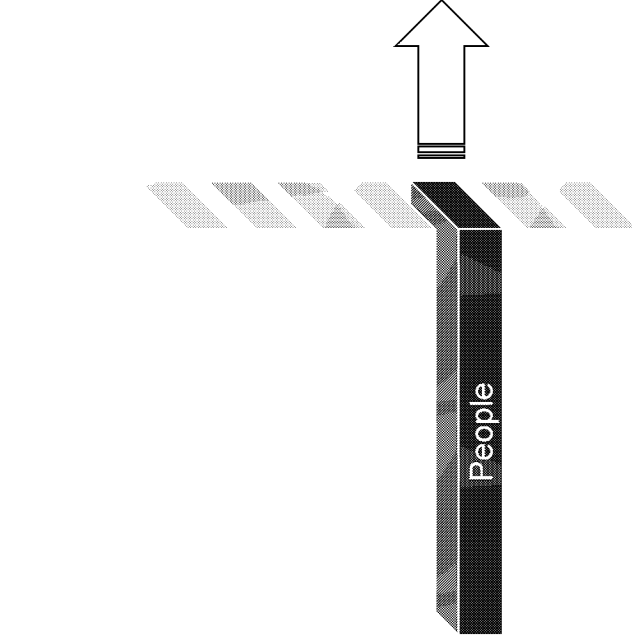
**People** – Forms the groups and organizational structure to support the Data and Analytics.

## Section sub-topics



## Section sub-topics

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CDO and OOCDO's strategic focus is driven by their primary objectives of managing information, delivering insights and generating business value

---

Future State Design  
People



#### The CDO:

- Bears the responsibility on behalf of the enterprise to foster value creation from the use of the organization's data assets
- Owns accountability for value creation through data exploitation, envisioning data-enabled strategies as well as enabling all forms of business outcomes through analytics, data and analytics governance, and enterprise information policy
- Head of all enterprise analytics and decision making affecting analytics
- Owns the responsibility for aligning data policy and administration with relevant regulatory, legal and ethical mandates

Source: Staffing the Office of the CDO: G00338192





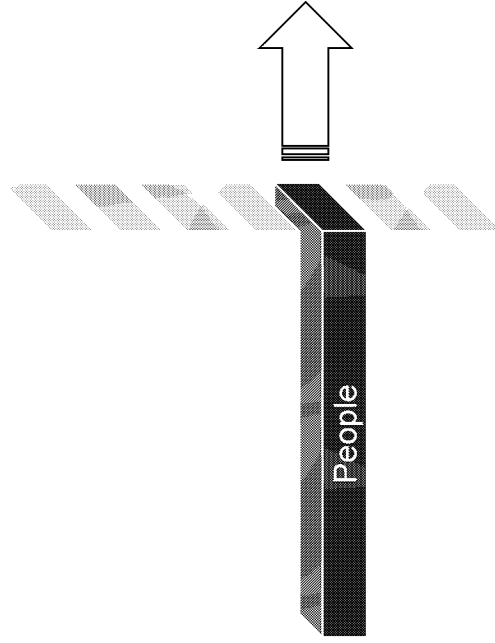






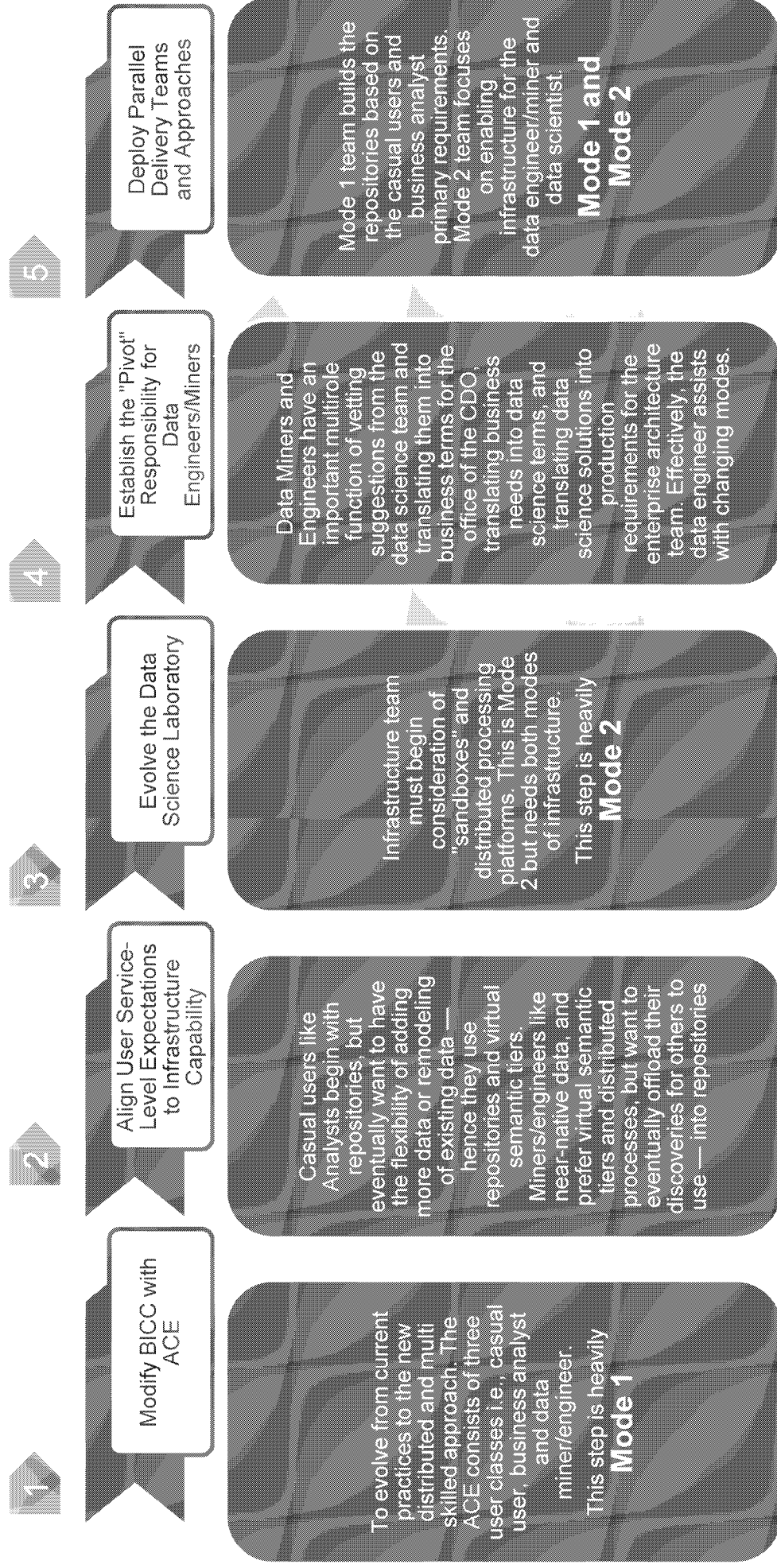
## Section sub-topics

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## Enabling analytics users for modern data and Analytics deployment constitute elements of Mode 1 and Mode 2

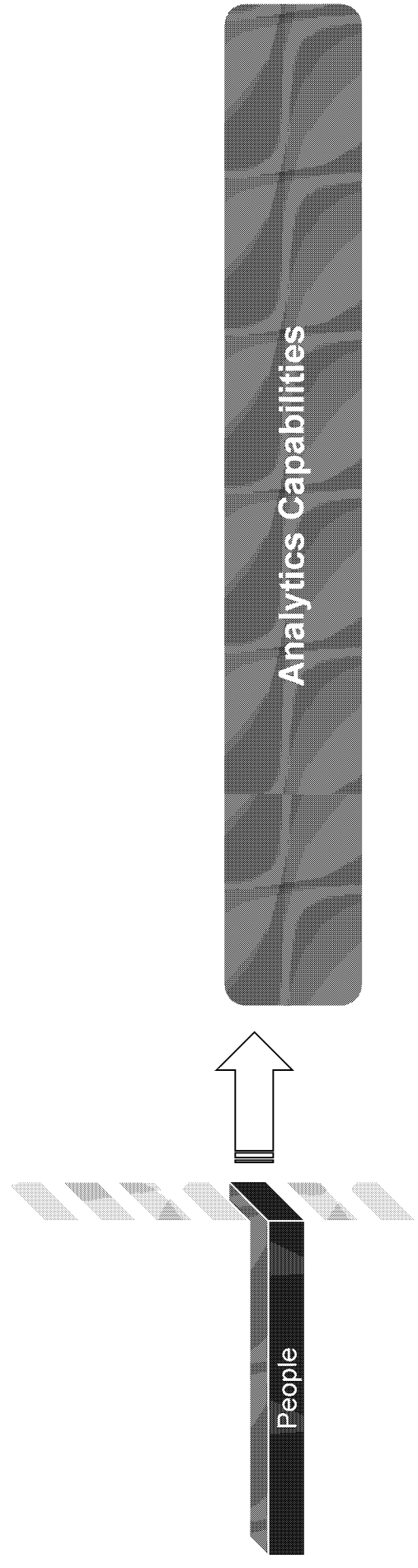


**BICC:** Business Intelligence Competency Centre

**ACE:** Analytics Centre of Excellence

## Section sub-topics

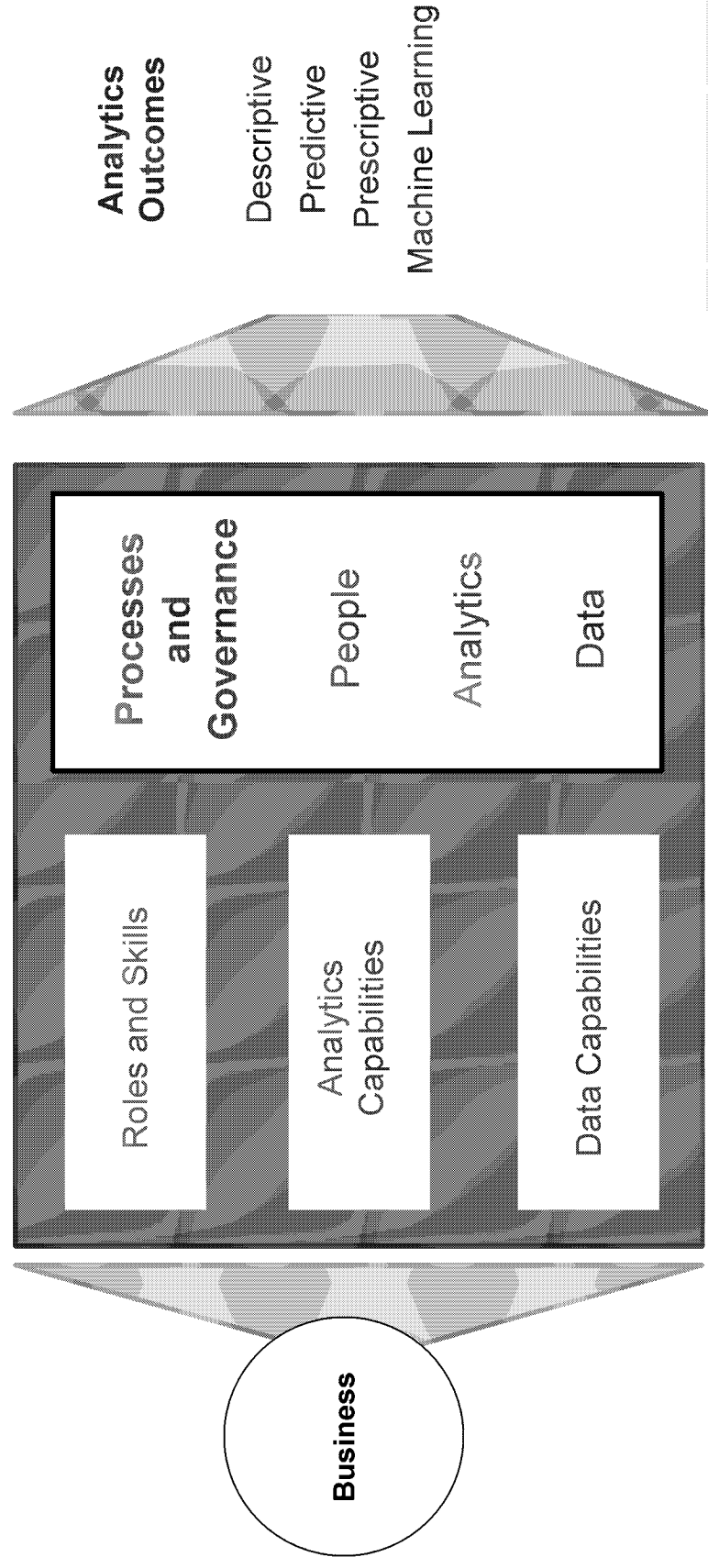
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For broad performance improvement within each business line, the RCMP will focus on roles and skills, analytics capabilities, data capabilities and processes and governance

Future State Design  
People

## Analytics Components

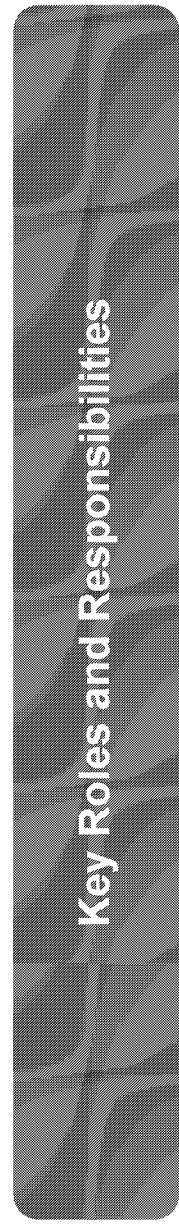
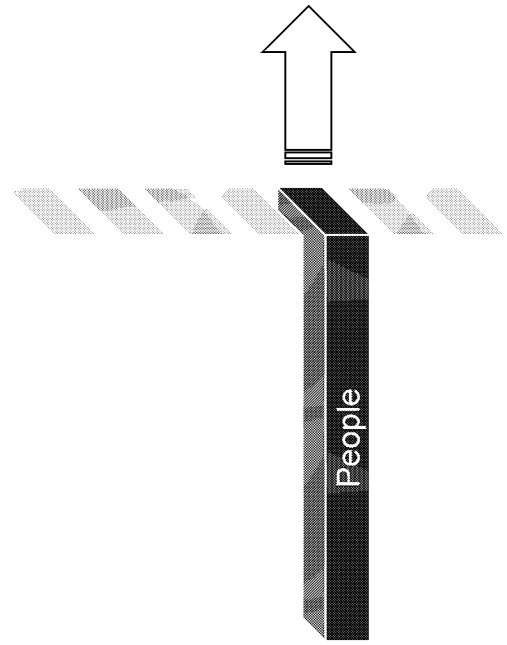






## Section sub-topics

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## Proposed Roles and Responsibilities — RACI View

| Processes/Tasks:                                | Executive Sponsor | Analytics Champion | Business Owner | BI Solution Team | Data Working Group | Analytics Working Group | ACE/ BICC | ACE/ BICC Governance Committee | IT  |
|-------------------------------------------------|-------------------|--------------------|----------------|------------------|--------------------|-------------------------|-----------|--------------------------------|-----|
| Analytics Vision and Strategy Formulation       | A                 | R                  | I              | I                | I                  |                         | C         | C                              | I   |
| Use Cases Identification for Analytics          |                   | C                  | A              | R                | I                  | I                       | I         | I                              | I   |
| Analytics Requests Prioritization & Decisions   |                   |                    | A              | I                |                    | C                       | I         | R                              | C   |
| Data Quality Monitoring                         |                   | A                  | A              | I                | R                  |                         | R         | R                              | I   |
| Data Quality Implementation                     |                   |                    | A              | R                | I                  |                         | I         | I                              | R   |
| Data Standards – Logical                        |                   | A                  | I              | I                | R                  |                         |           | I                              | I   |
| Data Standards – Physical                       |                   | I                  |                | I                | C                  |                         | I         | I                              | A/R |
| Data Provisioning                               |                   | I                  | C              | C                |                    |                         |           | I                              | A/R |
| Model Development and Analysis process          |                   | A                  |                | R                |                    | C                       |           |                                | C   |
| Master Data and Reference Data conceptual level |                   | A                  |                | C                |                    |                         | R         | I                              | C   |
| Master Data and Reference Data physical level   |                   | C                  |                |                  |                    |                         | I         |                                | A/R |

R = Responsible  
A = Accountable  
C = Consulted  
I = Informed



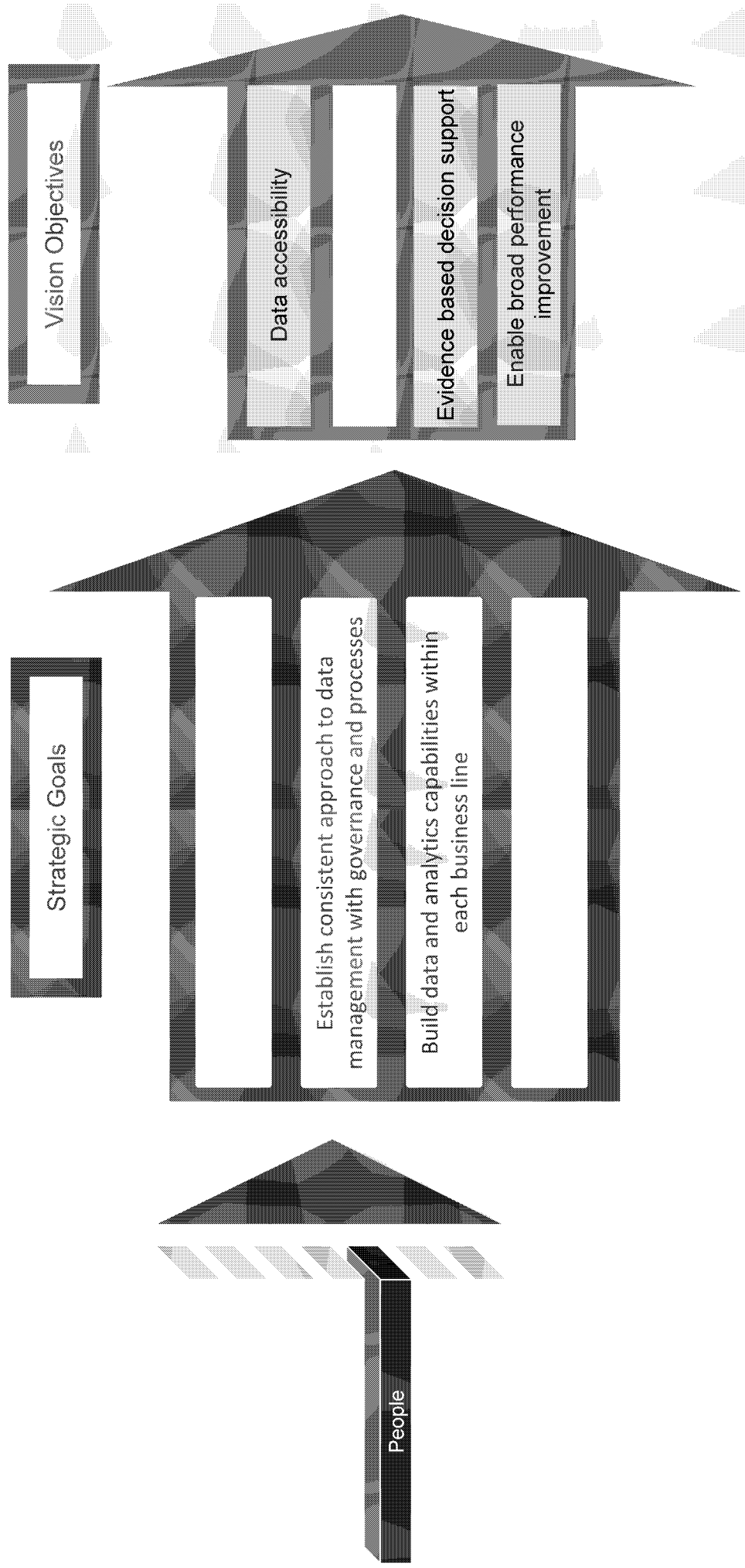
## Analysts Skill Sets

|                         | Domain Understanding |  |  |  | IT Skills |  |  |  | Quantitative Skills |  |  |  |
|-------------------------|----------------------|--|--|--|-----------|--|--|--|---------------------|--|--|--|
| Data Scientists         |                      |  |  |  |           |  |  |  |                     |  |  |  |
| Citizen Data Scientists |                      |  |  |  |           |  |  |  |                     |  |  |  |
| Data Engineers          |                      |  |  |  |           |  |  |  |                     |  |  |  |
| Business Experts        |                      |  |  |  |           |  |  |  |                     |  |  |  |
| Software Engineers      |                      |  |  |  |           |  |  |  |                     |  |  |  |



# Setting up recommended Organization & Roles will enable Analytics strategic goals and vision objectives

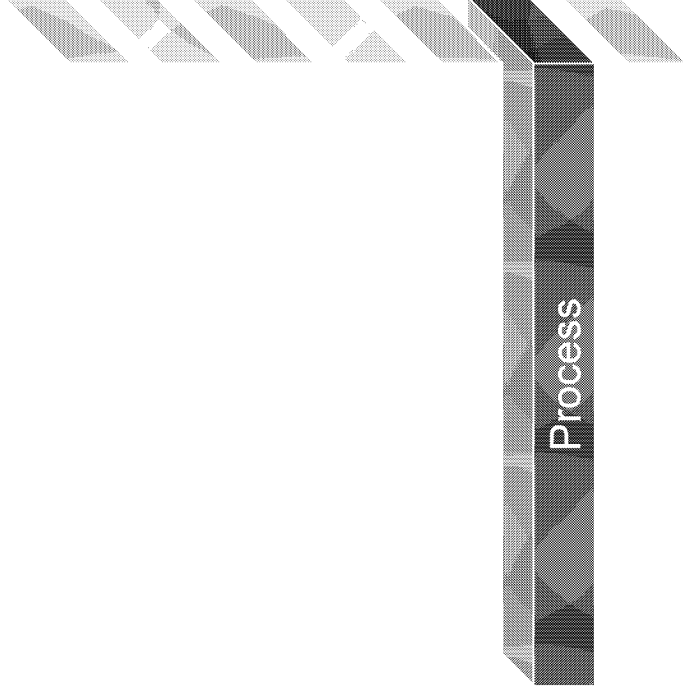
Future State Design  
People



## Section Purpose

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This section articulates the Future State Design for Analytics within RCMP which defines the Process component of the program that will be deployed to enable execution and achievement of the RCMP Vision and Strategy.

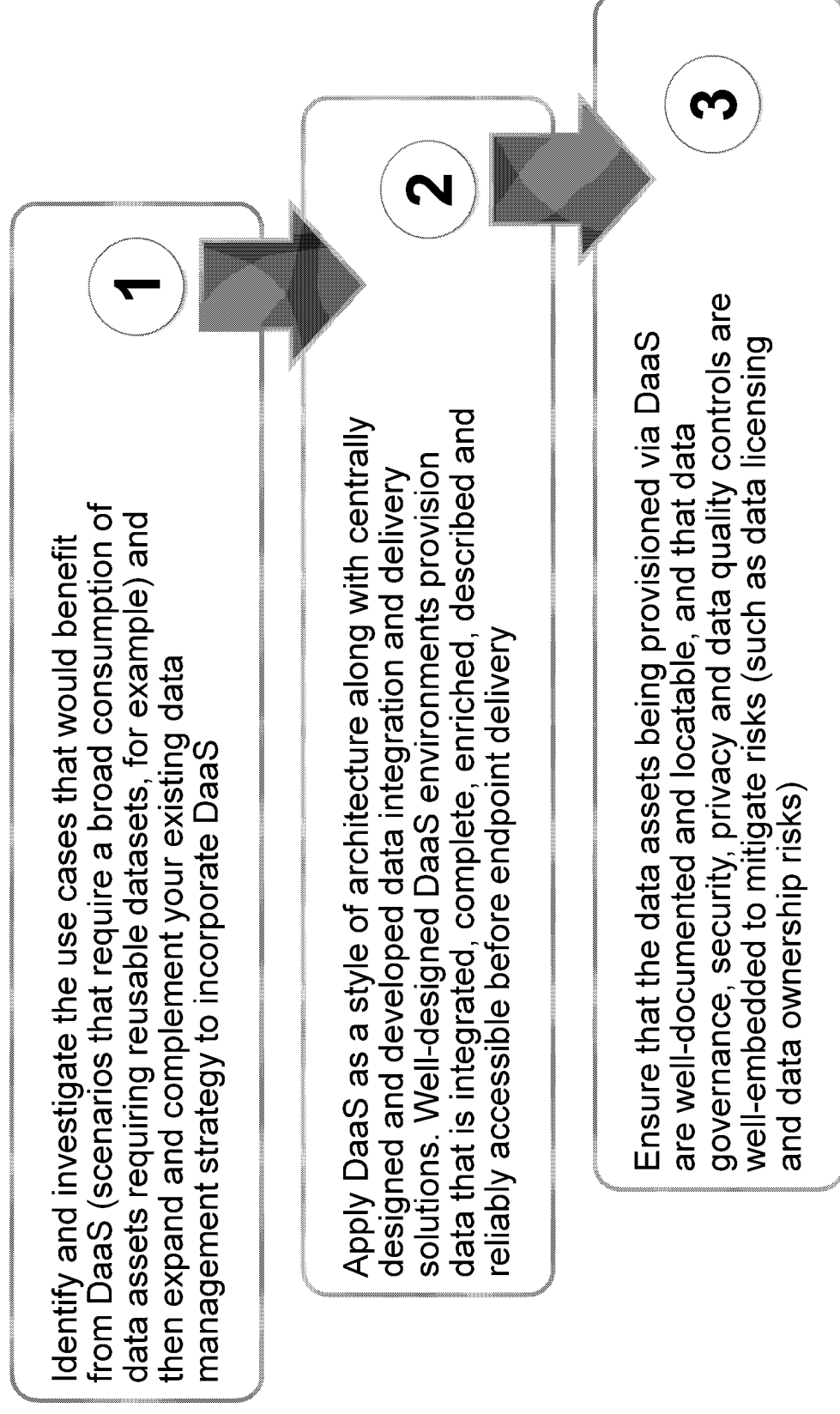


**Processes** – Sets up the processes to support data.





## Data and analytics leaders should follow a 3-steps process for successful data provisioning and modernizing information infrastructure



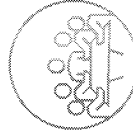
## The following components should be part of service catalog for Data-as-a-Service for the RCMP



- Service Definition of Data-as-Service, including service description, base level services, services not included, and add-on or advanced/premium services



- Service Level Agreement, including clear definitions of the service availability targets and turn-around time for high, medium, and low priority requests



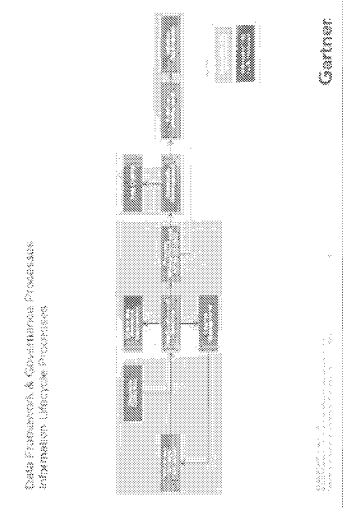
- Clear ownership of and accountability for the service, including contact names of Data-as-a-Service owners, service category/portfolio owners and escalation path



- Request method, including information about standard turn-around time

## Analytics Processes

- Where Organization and Roles define the people and committees required and instruments capture critical mandate and operation details, the Processes are the actions that bring Governance and Analytics Program to life
- These processes cover the following key activities:
  - Processes establishing Analytics direction, strategic goals, institute policy, and manage change
  - Processes that define resource allocation, investments and resolve issues
  - Processes that create the foundation including data quality and standards development, to operationalize governance
  - Processes establishing the supporting activities that underpin the management of data

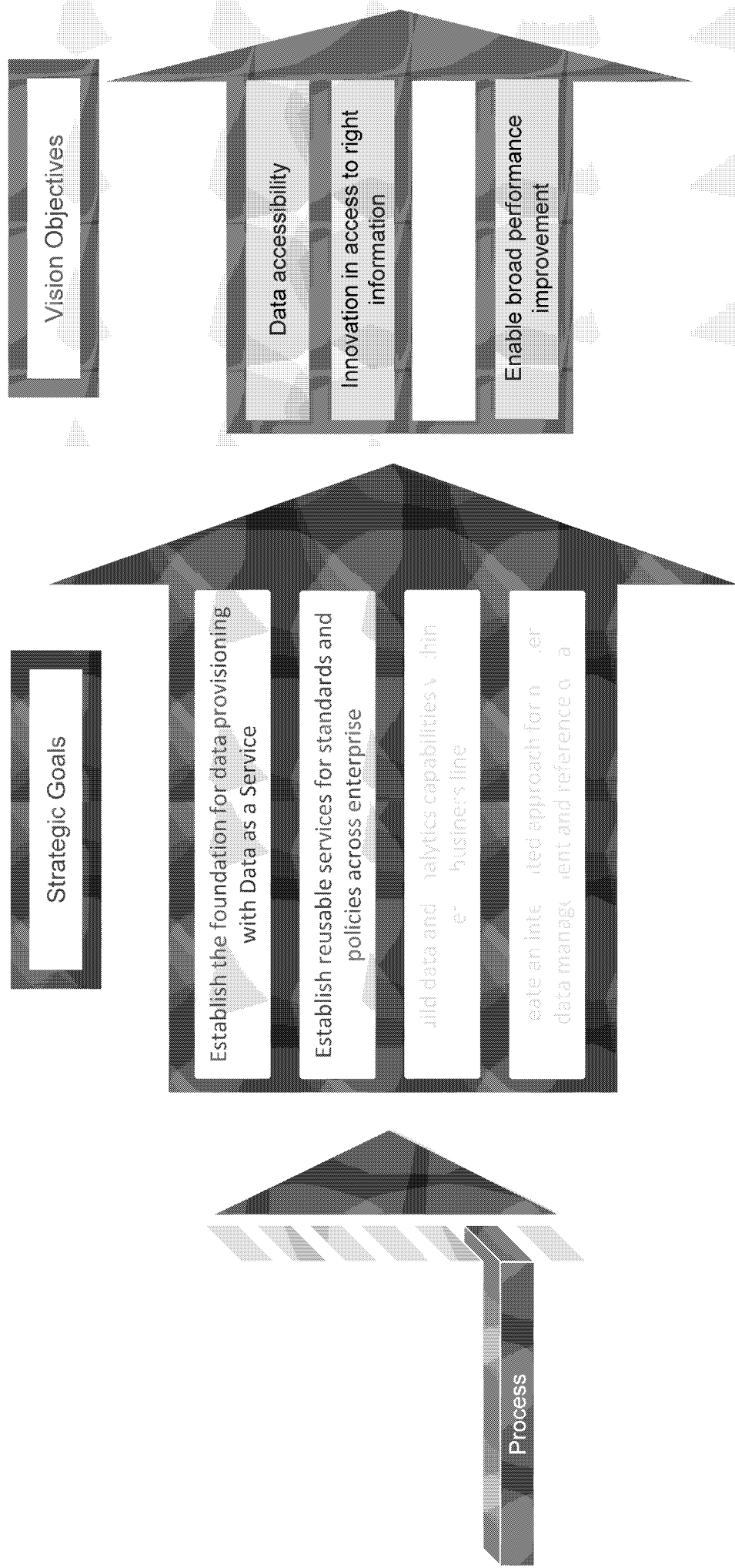


The RCMP Analytics processes describe how the department organization design (roles and groups) will work together to set the strategic direction for RCMP Analytics program

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# Setting up recommended Processes will enable Analytics strategic goals and vision objectives



## Section Purpose

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This section articulates the Future State for Analytics within RCMP which defines the Technology component of the program that will be deployed to enable execution and achievement of the RCMP Vision and Strategy.



**Technology** – Provides the technology capabilities to meet the Data and Analytics needs.









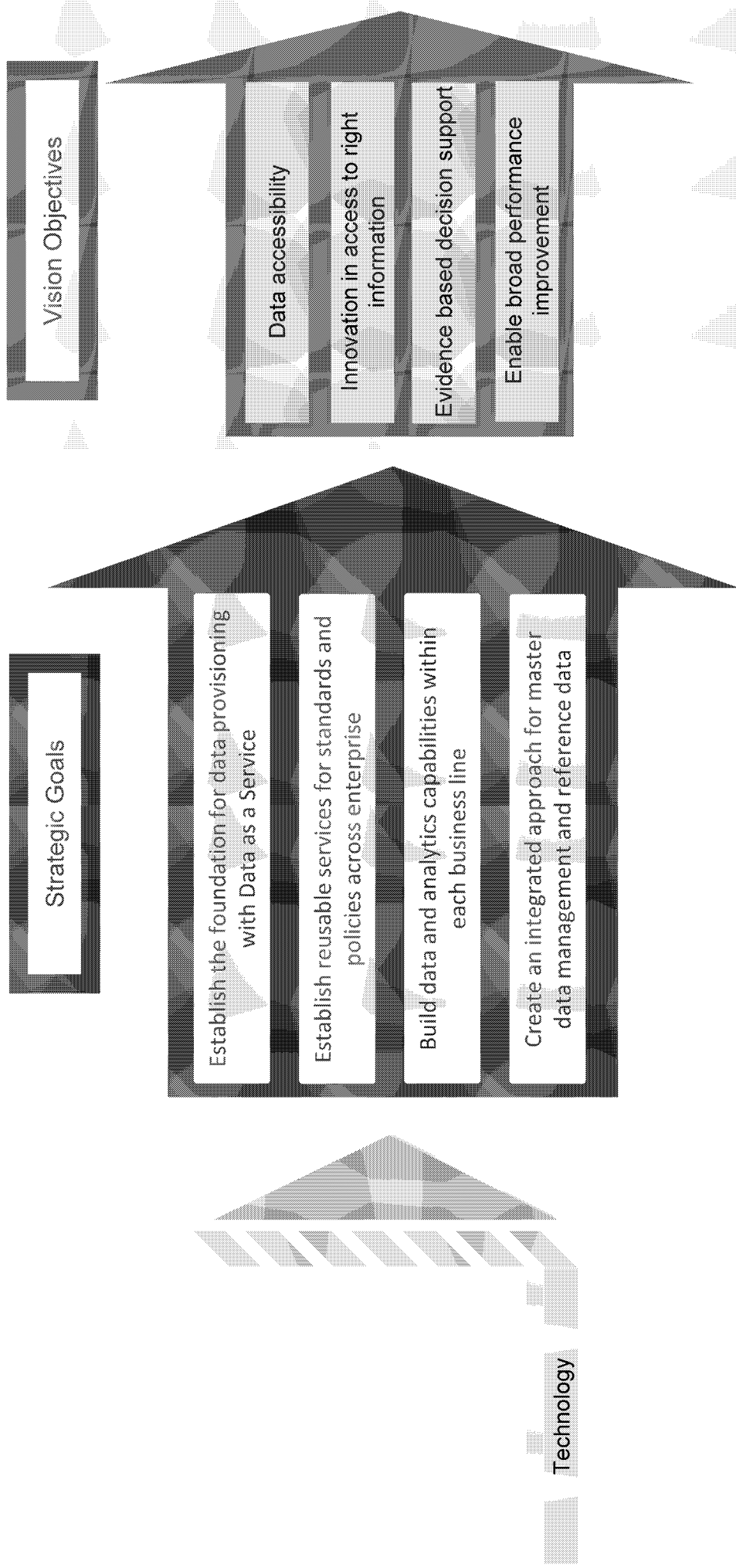






# Setting up recommended Technology will enable Analytics strategic goals and vision objectives

Future State Design  
Technology



Contacts

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Gartner Consulting

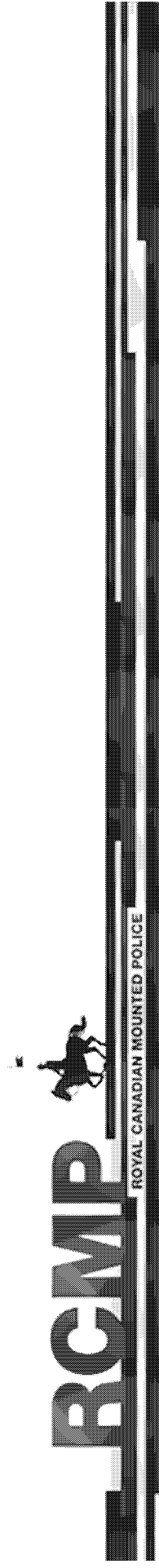
@gartner.com

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# Gartner Report on Data and Analytics at the RCMP

May 16, 2018

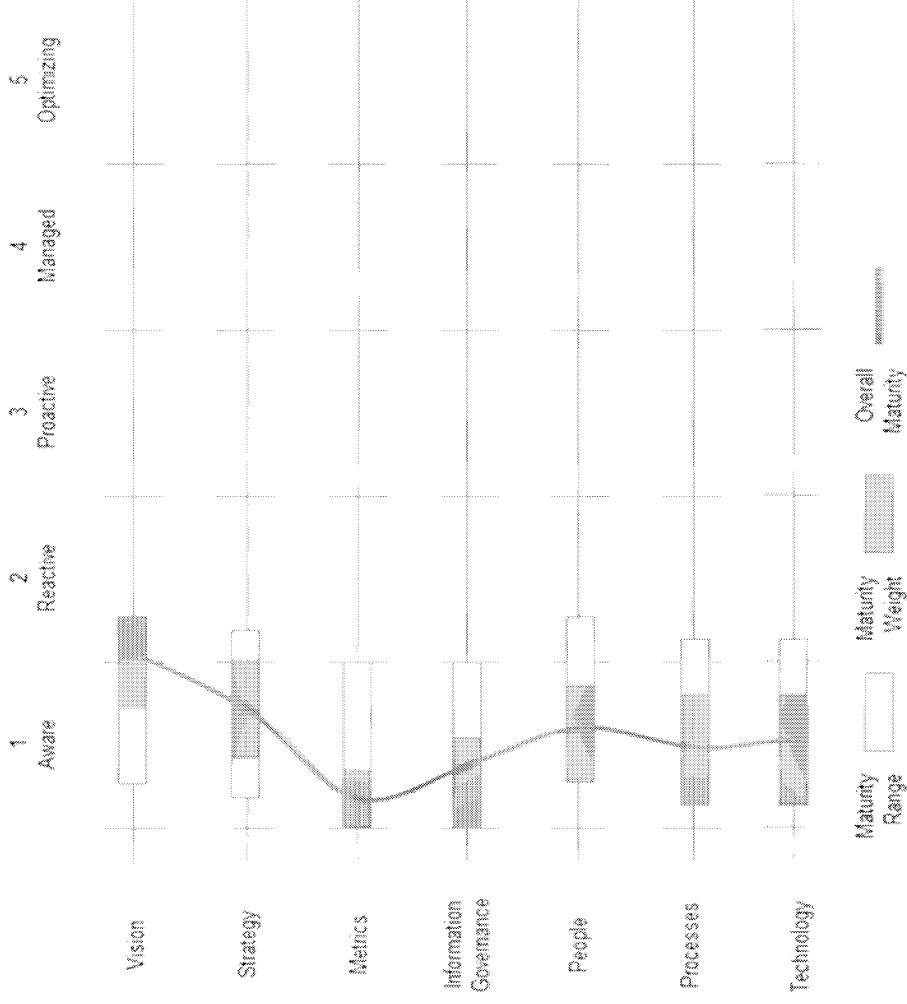
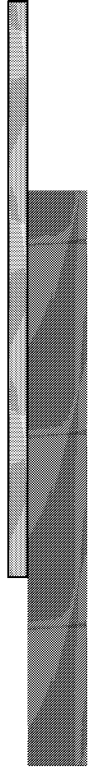


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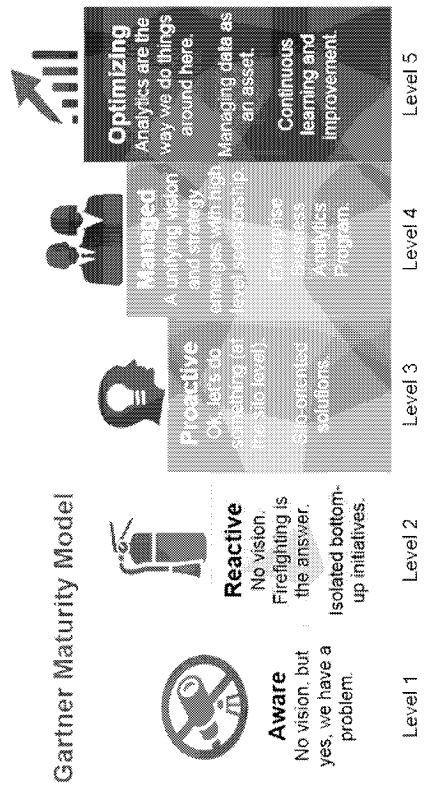
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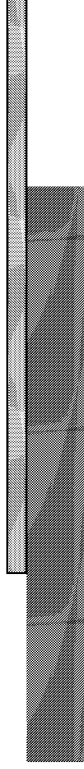
# Maturity Level



RCMP Strategic Planning and IT understand the untapped potential that a holistic Data and Analytics program can provide, however there is little evidence that it is consistently supported at the broader division leadership level and investments are required in many areas to achieve that goal.



# Current Status (Gartner Findings)



## Maturity Impact on Ability to Achieve Value

### Recommended Focus:

**Vision and Strategy** — A common Data and Analytics vision and strategy must be adopted to achieve consensus and guide all data and analytics priorities and initiatives across people, process, and technology dimensions.

### Primary Weaknesses:

**Metrics** — Without metrics, it is difficult to measure and evaluate the impact that a Data and Analytics program will have on RCMP and its ability to deliver on strategic objectives.

**Data Governance** — In order to drive data quality decisions at appropriate level, enable data quality monitoring and resolution at both central BICC and BI Solution Team levels.

**Processes** — For a successful Data and Analytics program, its imperative to have an established, documented and communicated processes for provisioning of data services. Enabling timely and effective data service provisioning will have a significant impact on business ability to realize business value from their information assets.

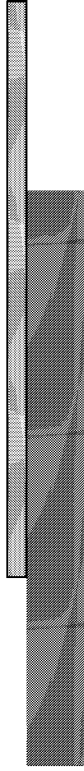
**Technology** — Without the foundational elements of master data management, will not be able to reap maximum benefits of Data and Analytics. Without business product owner, EDW in the current form will likely miss the mark on speed, flexibility, and agility, which need to take into account the latest best practices for logical data repositories and marts enabling effective data access, self-service and advanced analytics.



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# Current Status (Gartner Findings)



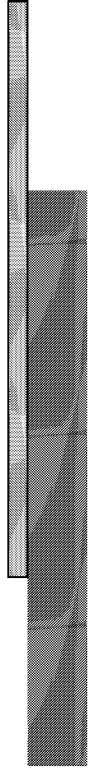
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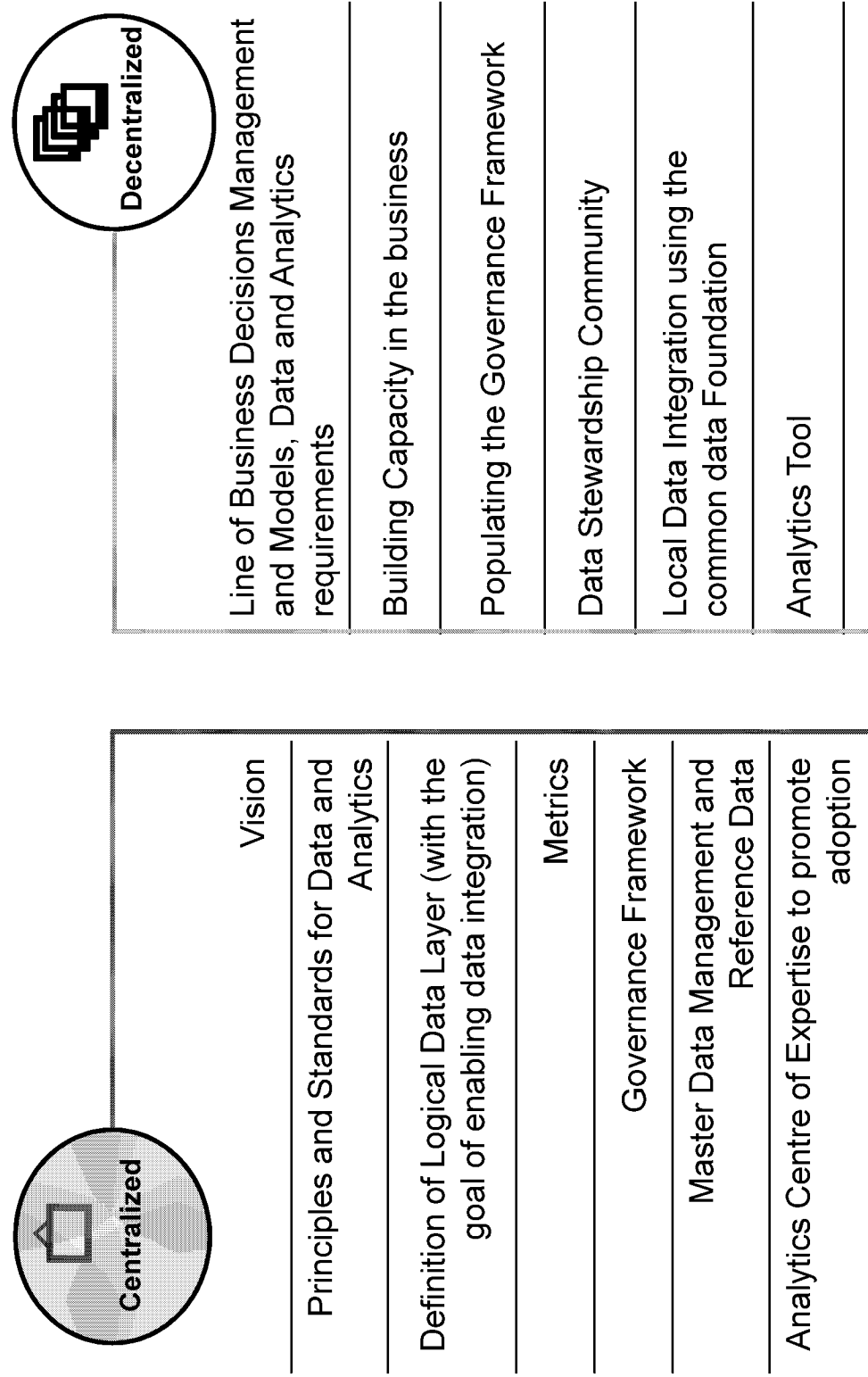
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# Strategic Goals

# Federated Model

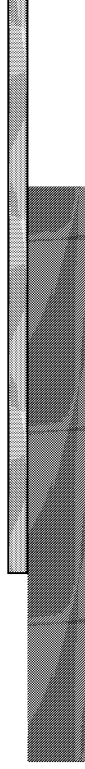


- The Federated model for Analytics includes both Centralized (i.e., enterprise-focused) and De-centralized (i.e., functional-focused) Analytics delivery





# ACE: Analytics Centre of Excellence



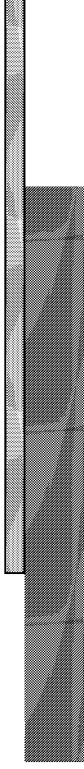
- Performing management and administrative activities, and gauging project performance
- Fostering innovation and self-service enablement along with related knowledge management activities
- Establishing tool and architecture standards
- Identifying information sources and help building analytics capabilities for business solution teams
- Defining and enabling required roles and responsibilities, and influencing culture

## 8 Key Data and Analytics

### Roles

1. Data and Analytics Champion
2. Facilitator
3. Business Process Analyst
4. Analysts
5. Data Engineer
6. Data Architect
7. Lead Data Steward and Data Stewards
8. Master Data Management (MDM) Program Manager

# DaaS: Data-as-a-Service

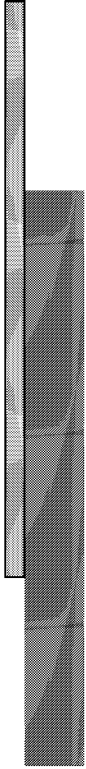


DaaS: transforming raw data into meaningful data assets for agile/timely data provisioning, and the delivery of these data assets on demand via consistent, prebuilt access, with the aid of standard processing and connectivity protocols.

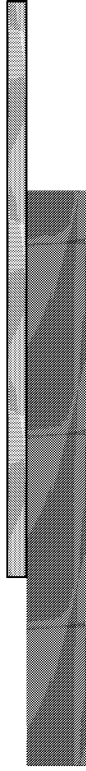
## Advantages:

- Efficient delivery of timely, accurate, repeatable processes
- Provide contextualized, repeatable shared datasets for flexible data delivery
- Build metadata to ensure it is valuable, understood and consumable especially for those who do not own the data – otherwise valuable data often lacks metadata to describe what it is so that it can be reused
- Build a service-oriented architecture that renders the platform on which the data resides irrelevant – deliver internal and external data from any type of originating system or even collected system (data warehouse, data mart, data lake, etc.)

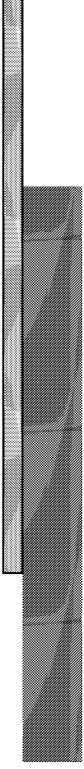
# Data Governance



# Processes



# MDM: Master Data Manager



**MDM:** technology-enabled business discipline in which business and IT work together to ensure the uniformity, accuracy, stewardship, governance, semantic consistency and accountability of an enterprise's official shared master data assets.

## Three groups of people involved in MDM

### Data Governance Council

The essential "head" of any enterprisewide MDM program. This is a council of business leaders that sets and enforces policies around the creation, storage, use, archive and deletion of enterprise data.

### Data Stewards

Dedicated employees within each business area that create and edit the master data. Data stewards are accountable for the production, updating, definition and integrity of master data.

### MDM Infrastructure Team

Technical professionals who implement the MDM technology and systems. The MDM infrastructure team is composed of CS/CP resources who are devoted full time to the MDM initiative.

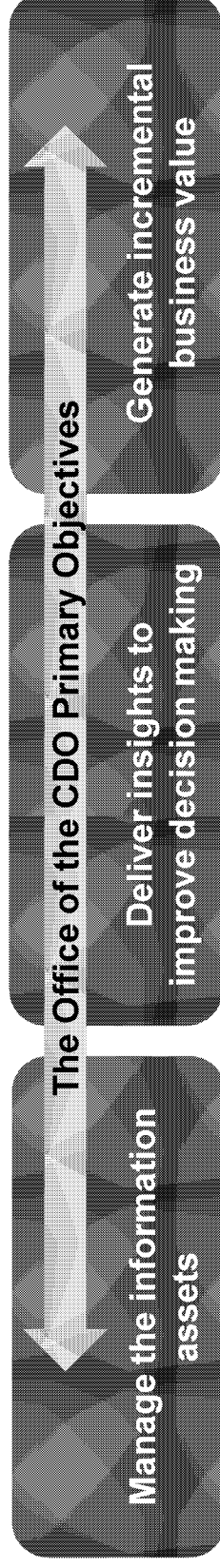
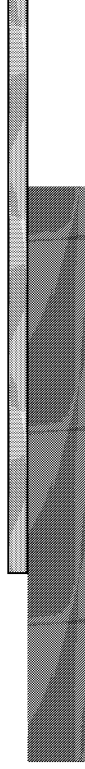


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# CDO: Chief Data Officer



- **Champion and change agent in leading the organizational shift** to create and sustain the enterprise data and analytics movement
- The CDO role should be a senior role with leadership and budget responsibility, and **accountability for enterprise information assets**
- The CDO is **different from the CIO**, owning the information strategy, risk mitigation, governance, analytics, and stewardship, while the CIO owns the physical hardware and infrastructure (SSC)
- Lead the effort to **ensure data and analytics are integrated into the business strategy** and lead the shift to a data-driven, decision-making culture
- Gartner recommends that the RCMP focus its efforts in the immediate term on the priority issues and the mitigation strategies identified in this report. Hence placing the CDO appointment on a longer term timeline.



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